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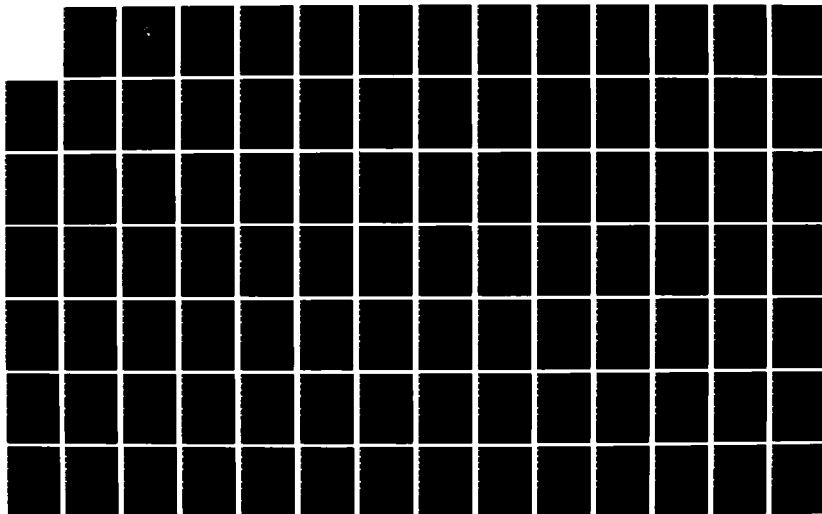
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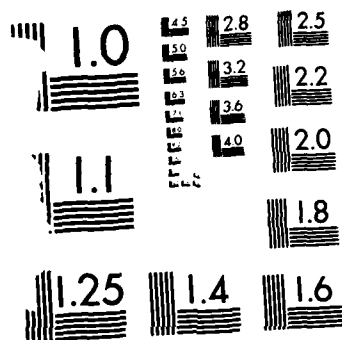
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# NAVAL POSTGRADUATE SCHOOL

## Monterey, California

AD-A165 238



# THESIS

AN ASSESSMENT OF THE  
LIFE CYCLE CONTRACTING MODEL FOR USE BY  
MAJOR AEROSPACE WEAPON SYSTEM ACQUISITION MANAGERS

by

KIMBERLY JOY ANNUNZIATA  
December 1985

Thesis Advisor:

Dan C. Boger

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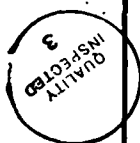
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An Assessment of the  
Life Cycle Contracting Model for Use by  
Major Aerospace Weapon System Acquisition Managers

by

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Submitted in partial fulfillment of the  
requirements for the degree of

MASTER OF SCIENCE IN MANAGEMENT

from the

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### ABSTRACT

This thesis assesses the utility of using the Life Cycle Contracting Model (developed by Dan C. Boger, Carl R. Jones, and Kevin C. Sontheimer) in major weapon systems acquisition. The conclusions are based on an analysis of LCC model simulated "real world" follow-on production contracting scenarios. "What if" changes are made to the contracting scenario parameters to understand how the LCC model might be used by major weapon system acquisition and contract managers. An analysis shows that the LCC model can be used to interpret the results of trade-off decisions and to assist the contract manager in developing sound negotiating strategy alternatives. Total contract cost to the government cannot be predicted with the model but the effects on total cost of contracting decisions can be inferred and compared. The LCC model can be used to justify deviations from full and open production competition and to demonstrate the predicted results of viable, lower cost alternatives to firm fixed price contracting.

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## I. INTRODUCTION

### A. GENERAL

Acquiring major weapons systems requires that a multitude of trade-off decisions be made. Common decisions made by acquisition managers relate trade-offs between cost, schedule, technical performance, and operational supportability.

Acquisition managers must make trade-off decisions in the "real world" of uncertainty. In this sense, acquisition managers will have to rely more and more on the capabilities of computer assistance to apply mathematical models to the "real world" of major weapon system acquisition to enhance their capability to make informed and intelligent trade-off decisions.

Many changes are taking place in the defense acquisition world. Acquisition managers have few tools currently available for systematically and effectively analyzing "what if" contracting scenarios. Major weapon system costs are high and today's acquisition and contract managers don't often apply incentives to reduce costs because they don't have the proper tools to make innovative trade-off decisions efficiently.

A Life Cycle Contracting (LCC) model has been developed by Dan C. Boger, Carl R. Jones, and Kevin C. Sontheimer. This LCC model correlates some of the major acquisition trade-off criteria such as budget available, production experience curves, production quantities, contract types, and the competitive costs of doing business. The relationships have been correlated into a mathematical model which will be useful in making key contract strategy decisions.

An analysis of the LCC model characteristics provides useful insight into the ways a contracting officer may change the key variables of a contracting strategy decision in the production phase of the acquisition cycle. Effective use of this model will affect more advantageous costs and negotiating positions for the government.

Results of "what if" changes to planned production contract strategy decisions are analyzed and their usefulness to the contracting officer in developing incentives to reduce total acquisition costs to the government is assessed.

#### B. OBJECTIVES OF THE RESEARCH

The primary objective of this research is to analyze the Life Cycle Contracting (LCC) model developed by Dan C. Boger, Carl R. Jones, and Kevin C. Sontheimer in their paper "Life Cycle Contracting is the Corollary of Life

Cycle Costing". The analysis assesses the utility of the model in major weapon systems acquisition.

#### C. THE RESEARCH QUESTION

The primary research question is: How might the Life Cycle Contracting (LCC) model be utilized by contracting officers to procure major aerospace weapon systems?

Secondary questions addressed are:

1. What are the basic assumptions under which the model was developed?
2. What are the major characteristics of the factors in the LCC model and how are they related?
3. Is there current literature to support the relationships and assumptions of the model?
4. Which LCC model factors will provide the most utility based on sensitivity to change?
5. How might these most sensitive factors be used to negotiate contract prices?
6. Can the model be altered to include competitively procured contracts?

#### D. SCOPE, LIMITATIONS, AND ASSUMPTIONS

The scope of this thesis is limited to an analysis of the LCC model as published. Application of the LCC model was made in as many "real world" situations as possible, limited only by the reasonability of documented historical parameters and assumptions. Shipbuilding industry assumptions may vary significantly from aerospace industry assumptions. To limit the scope of the application of this model, aerospace industry assumptions are developed and

supported. It is presumed that the shipbuilding industry supported assumptions could also be applied in the LCC model.

This study did not attempt to analyze cost estimating models nor to expand the analysis of the LCC model beyond its published assumptions except to explore possible applications of the model to non-sole source contracting scenarios. Personal interviews were limited to clarification of the LCC model by its authors and corroboration of assumptions with key Navy acquisition managers and other selected acquisition professionals.

#### E. RESEARCH METHODOLOGY

The research methodology used in this study consisted of a comprehensive analysis of the published LCC model. A literature review identified existing support for the LCC assumptions and relationships. The literature base was collected through the Naval Postgraduate School library, the Defense Logistics Studies Information Exchange (DLSIE), the Defense Technical Information Center (DTIC), and various private libraries.

Model parameters and assumptions were verified by telephone with current Department of Defense acquisition managers.

Various contracting scenarios were analyzed using the LCC model as a decision tool. Contracting scenarios were developed based on currently accepted and practiced contract strategies and methodologies. A sensitivity analysis was performed by changing LCC parameters and assumptions and comparing the results.

#### F. ORGANIZATION OF THE STUDY

The Introduction provides the reader with a general description of this research effort. Chapter Two consists of a basic description of the LCC model characteristics and assumptions. Chapter Three identifies and describes the LCC factors and relationships between them and identifies the supporting literature which corroborates the relationships. Chapter Four develops the contracting scenarios which were used in the LCC model and documents the assumptions made in each iteration of the "what if" sensitivity analysis. Chapter Five reports the results of the sensitivity analysis and provides suggestions for altering the common contracting scenarios to affect a contracting strategy for the government. Included are suggestions for altering the LCC model to accommodate competitive procurement. Chapter Six provides a synopsis of the findings and uses them to develop conclusions to the

question of how the LCC model can be utilized by contracting officers to procure major weapon systems. Limitations of the findings are discussed as well as recommendations for further research.

## II. THE LCC MODEL: CHARACTERISTICS AND ASSUMPTIONS

The basic assumptions of the LCC model are developed to address the relationship among the government, the contractor, and the contract. The contract is used to identify the level of risk which each party of the contract is willing to assume. [Ref. 1]

### A. THE BASIC ASSUMPTIONS

The decision trade-offs made by acquisition managers prioritize and integrate many requirements of a major weapon system program.

Acquisition managers must be able to select from alternative choices throughout the acquisition cycle and make critical decisions during windows of opportunity to provide a coordinated approach to achieving program objectives economically and effectively. [Ref. 2]

The LCC model attempts to consider the effects of budget fluctuations, learning curves, production quantities, contract types, and the competitive cost of doing business on the life cycle production cost of buying a major weapon system [Ref. 3].

By using this life cycle model, contract type assumptions can be made and fit into the model as parameters. An equation can thus be formulated which is representative of the actual cost of the production contract. In this way, the LCC model can be used to



enhance the information needed to make rational requirements trade-off decisions.

#### B. PROBLEMS INHERENT IN THE "SYSTEM"

The LCC model was developed to "establish effective cost control over (the) program costs" of a major weapon system [Ref. 4]. Systemic problems are identified in the development of the LCC model.

1. Major weapon system acquisitions often occur in highly customized, sole supplier contracting scenarios.
2. Production time profiles are established early in the development of the acquisition strategy and are usually determined long before actual costs, budget figures, or production schedules and other risk factors are known. The production time span is effectively fixed for production phase trade-off decisions.
3. A major weapon system acquisition budget is developed apart from the acquisition strategy. Key milestones in the acquisition strategy address resource requirements but budget formulation and the ultimate appropriation of resources is done outside the acquisition process. Funding levels available for any major weapon system production contract are known to the general public before a contract is solicited.
4. Aerospace industry prime contractors do not interact with the government as "true competitors" but as "quasi-monopolies"--few suppliers, one buyer [Ref. 5]. Overstaffing in engineering divisions may help to ensure "leading edge technology"; however, unnecessary defense quality, reliability, and maintainability requirements add needlessly to the overall costs of major weapons systems. The defense aerospace weapon system acquisitions are apparently made at "less than arms length". Normal competitive pressures do not apply in the LCC model assumptions. [Ref. 6]

The LCC model considers that discretionary costs are charged to defense contracts in excess of minimum cost

levels because strict cost controls are not applied. The LCC model refers to these costs as "convenience costs" because it is convenient and expedient for the government and the contractor to charge all costs to specific pools and not worry excessively about the bottom line cost of major weapon system contracts. There is little competitive or governmental pressure to minimize convenience costs at each cost incurrence level. [Ref. 7]

#### C. ASSUMPTIONS ARE DEFINED THROUGH RELATIONSHIPS

The LCC model recognizes that technology changes rapidly in the aerospace defense industry. Production and direct labor baselines can become meaningless over a relatively short time span. It is extremely difficult to determine when high costs are too high for a specified major weapon system. [Ref. 8]

The LCC model addresses the production contract time span problem as it relates to historically cooperative contracting arrangements. Contracts are performed at less than arms length for the convenience of both the government acquisition manager and the defense contractors [Ref. 9].

The LCC model links the "less than arms length" relationship between the government and the contractor with the federal budget process. Funding uncertainties are introduced both before and after acquisition strategy contracting decisions are made [Ref. 10].

Budgeting considerations include the fact that historical unit costs are often used to estimate future funding requirements. Production quantities are often established with little or no regard for the effect of changes in production lot sizes on the total cost of the production cycle. Further, it is assumed that a relative change in production unit cost is proportional to a change in the production lot size.

The LCC model assumes that major weapon system production runs are made by a single source, so potential competition is absent from the model. [Ref. 11]

The LCC model treats the government as an entity with no specified management objectives [Ref. 12]. The closest objective realizable in a trade-off analysis would be the program objectives of the major weapon system program. In dealing with government decision making, the assumption made is that there is no one person or group who has the authority or responsibility for the achievement of major weapon system program objectives.

#### D. THE MAIN HYPOTHESIS

The LCC model explores the hypothesis that, because the defense contractors historically perform under a sequence of annual contracts as sole source producers, the contractor will (or will not) control the amount of convenience costs incurred based on, first, the type of

incentive arrangements built in to the contract and, second, the amount of funding known to be available for that particular contract.

Of primary concern in this (LCC model) analysis are the parameters which are explicitly part of the contract: the cost-sharing ratio and the incentive fee ratio (profit ratio). By postulating reasonable values for the remaining (LCC model) parameters, one can determine what combinations of these two principle parameters will result in a positive incentive for contractors to incur convenience costs. [Ref. 13]

Results of changes in these two key parameters can also be used to identify contract negotiating parameters for the acquisition managers. The remaining parameter values can easily be tailored to fit known contracting scenarios.

The LCC model characteristics and assumptions are made within the complex triad of the government, the contract, and the defense contractor. The incentives are developed through the contract to provide a positive environment to keep the costs to a minimum level.

#### E. THE CONTRACT TYPES

Major aids available to the contracting manager are the wide variety of contract types with which he can acquire the required equipment. To select the best contract type for a particular buy, the contract manager must consider all available contract types and the factors which influence his use of each type. [Ref. 14]

The following descriptions of contract types are provided as background to enable an understanding of the

types of tradeoff decisions which must be made by the contracting officer.

A FFP contract is defined as a contract for which the price is agreed to before a definitive contract is awarded. The price remains for the life of the contract unless revised within the "changes clause" of the contract. Because the price is fixed, the contractor assumes full cost responsibility and the contractor's cost share is defined to be 100 percent. [Ref. 15]

A firm fixed price contract is suitable for acquiring commercial products or commercial type products . . . on the basis of reasonably definite functional or detailed specifications. When (1) there is adequate price competition; (2) there are reasonable price comparisons with prior purchases, similar supplies or services made on a competitive basis or supported by valid cost or pricing data; (3) available cost or pricing information permits realistic estimates of the probable costs of performance; or (4) performance uncertainties can be identified and reasonable estimates of their cost impact can be made, and the contractor is willing to accept firm fixed price representing assumption of the risks involved. [Ref. 16]

The Cost Plus Incentive Fee (CPIF) contract is defined as a pre-arranged agreement between the buyer and the seller on a contract fee to be adjusted based on the relationship of total actual cost and the total target cost of executing the work required by the RFP. Target costs are established in the contract as well as a cost share ratio which is used to increase or decrease the contractor's share of cost whenever actual costs differ from the target cost. [Ref. 17]

A CPIF contract is appropriate for development and test programs when (1) a cost reimbursement contract is necessary and . . . (2) a target cost and fee adjustment formula can be negotiated that are likely to motivate the contractor to manage effectively . . . . The fee adjustment formula should provide an incentive that will be effective over the full range of reasonably foreseeable variations from target cost. If a high maximum fee is negotiated, the contract shall also provide for a low minimum fee that may be a zero fee or, in rare cases, a negative fee. [Ref. 18]

The share of risk associated with a CPIF contract is dependent on the degree of confidence held in the results of the development and testing phase of the acquisition process.

The Fixed Price Incentive (firm target) (FPIF) contract is defined as a contract where the target cost, target profit, target price, price ceiling, and cost share are developed at the outset of the contract. Upon completion of the contract, actual (allowable) costs are analyzed, totaled, and compared to the target cost figure. The final contract price includes the allowable costs and incentive fees, but cannot exceed the price ceiling agreed to in the contract. [Ref. 19]

A FPIF contract is generally used when exact pricing is impossible due to limitations in known production methods or expected scheduling problems [Ref. 20].

This type of contract has its greatest application in the purchase of high-cost, long-run production items. [Ref. 21]

This contract type may be used only when (1) the contractor's accounting system is adequate for providing data to support negotiation of final cost of incentive price revision; (2) adequate cost or pricing information for establishing reasonable firm targets is available at the time of initial contract negotiation; (3) the determination and findings must be signed showing that this contract type is likely to be less costly than any other type or that it is impractical to obtain supplies or services . . . without the use of this contract type. [Ref. 22]

The Cost Plus Award Fee (CPAF) contract is defined as a cost type contract that provides for a fixed fee amount as well as an award amount which can be earned based on the degree to which the contractor satisfies the buyer with the performance of the contract. The award fee is sufficiently large to motivate the contract to excel in areas such as cost control, delivery schedules, technical innovation, and quality. The amount paid from the award fee available is subjectively determined by the buyer based on a judgemental evaluation of the contractor's performance in predetermined contract areas and is not subject to dispute by the contractor. [Ref. 23]

A Cost Plus Award Fee contract is suitable for use when (i) the work to be performed is such that it is neither feasible nor effective to devise predetermined objective incentive targets applicable to cost, technical performance, or schedule; (ii) The likelihood of meeting acquisition objectives will be enhanced by using a contract that effectively motivates the contractor toward exceptional performance and provides the government with the flexibility to evaluate both actual performance and conditions under which it was achieved; and (iii) any additional administrative effort and cost required to monitor and evaluate performance are justified by the expected benefits . . . . The maximum fee payable (i.e., the base fee plus the highest potential award fee)...(has statutory) limitations . . . . [Ref. 24]

Since the award fee determination is subjectively derived, it would be difficult to foresee what its relation would be to other cost factors. For this reason, the CPAF was not used to develop the contracting scenarios in this analysis. Inclusion would involve developing a hypothetical relationship between the award fee and other cost factors based on specific research of award fee contracting relationships. Inclusion of the CPAF contract in the analysis of the LCC model is outside the scope of this thesis.

A purely competitive contracting scenario would result from a government Invitation For Bid (IFB). Industry's response to IFB's normally results in the award of a Firm Fixed Price (FFP) contract.

If an IFB is not the appropriate means for soliciting a proposal, a Request For Proposal (RFP) can be issued which results in acceptable "competitive" bids being submitted for the work solicited. Industry's response to an RFP can result in contracts ranging from the FFP contract all the way to a cost type contract, depending on the degree of risk and/or uncertainty perceived to be associated with the proposal.

The Competition In Contracting Act (CICA) of 1984 amended the Armed Services Procurement Act of 1947 and the Federal Property and Administrative Services Act of 1949.



CICA guidelines for the use of specific contract types are listed below. [Ref. 25]

Sealed bids must be used if:

Time permits solicitation, submission, and evaluation of sealed bids;

Award will be made on the basis of price and other price-related factors;

It is not necessary to conduct discussions; and

There is a reasonable expectation of receiving more than one sealed bid.

Otherwise, competitive proposals shall be requested. There are seven circumstances under which "other than competitive procedures" may be used:

Property or services are available from only one source and no other type of property or services will satisfy the needs of the agency (includes follow-ons and unsolicited research proposals);

The agency's need is of such unusual and compelling urgency that the United States would be seriously injured unless the agency is permitted to limit the number of sources (must still obtain maximum competition practicable);

It is necessary to award to a particular source/sources in order to maintain a facility in case of national emergency or to achieve industrial mobilization or to establish or maintain an essential engineering, research, or development capability provided by an educational or other non-profit institution or a Federally Funded Research and Development Center;

It is required by the terms of an international agreement or treaty or by written direction of a foreign government who is reimbursing the agency for the cost of the procurement;

The statute expressly authorizes or requires procurement through another agency or from a specified source, or the agency's need is for a brand-name commercial item for authorized resale;

Disclosure of the agency's needs would compromise national security unless the number of sources is limited (must still obtain maximum practicable competition); or

The head of an agency determines it is necessary in the public interest to use other than competitive procedures and gives Congress 30 days written notice before award.

Considering CICA guidelines in relation to the LCC model, it is apparent that the model was developed to deal with the exceptions to a competitive procurement scenario.

Follow-on production contracts for major weapon systems or components fall into the sole source exception category or the industrial base exception category. During a National Contract Manager's Association, Monterey Peninsula Chapter meeting at the Naval Postgraduate School, Captain Peter DeMayo, Commander of Contracts at the Naval Air Systems Command (NAVAIR), said that 7 billion dollars of the 13 billion dollars worth of NAVAIR major weapon systems contract dollars are spent for follow-on production. These buys are considered to be exceptions to full and open competition under CICA. [Ref. 26]

The LCC model parameters are numerous and complex. It is important to be able to select the appropriate parameters with which a specific contract scenario can be developed. Application of reasonable relationships, estimates, and ranges for the defined parameters is necessary. The objective of this research is to apply these LCC model assumptions and parameters in common contracting scenarios and to gain some insight into the

effects of different trade-off decisions on the total cost to the government.

The next chapter will specifically identify and describe the LCC model factors and their relationships, and identify the supporting literature behind the assumptions and parameter ranges.

### III. THE LCC FACTORS AND THEIR RELATIONSHIPS

#### A. THE SOURCE

The following description of the LCC factors and relationships is provided based on the Boger, Jones, and Sontheimer report "Life Cycle Contracting is the Corollary to Life Cycle Costing" [Ref. 27]. Supporting literature is identified as appropriate throughout the description of the model.

#### B. THE RELATIONSHIPS

The assumptions were developed in the prior chapter and are represented here as relationships between several key factors. These factors can be quantified in a number of different contracting scenarios.

The factors will be listed as they appear in the overall defense contractor profit relationship. Underlined titles identify the factors that make up the relationships.

$$\begin{aligned} \text{Contractor Expected Return} = & [\text{cost share} * \\ & (\text{proposed cost } (t) - \text{actual cost } (t))] + \quad (1) \\ & (\text{profit ratio} * \text{proposed cost } (t)) \end{aligned}$$

Identification of the factors included in the relationship (1) follow:

t is the time period within which cost behavior is modeled.

t-1 is last period (year).

t+1 is next period (year).

Contractor profit is the amount the contractor expects to realize on the production contract over and above his proposed cost. The contractor profit is the value the contractor places on a production contract and is based on the profit he expects to realize.

Cost share is the percentage of the difference between the actual cost and the proposed cost that is the contractor's responsibility to pay. Ranges of appropriate cost shares used in the application of this model are assigned based on discussions with acquisition/contract professionals (as documented by Table 2).

Profit ratio is a percent which, in this model, is multiplied by the Proposed Cost (defined below) to get an estimate of the amount of profit that is expected to be earned on the contract.

Proposed cost is the contractor's proposed cost in this period (t). The proposed cost is a relationship of several factors which must be described separately before proposed cost can be understood.

$$\begin{aligned} \text{Proposed Cost (t)} = & \text{budget factor} * \\ & \text{learning factor} * \text{actual cost (t-1)} * \\ & \% \text{ change in quantity this year over last year} \end{aligned} \quad (2)$$

Identification of the factors included in the relationship (2) follow:

Budget factor is the percent of the budget received over or under the amount requested. For example, if the budget request was \$2 million and the amount of funding provided in the appropriation was \$1.8 million, the budget factor would be 90 percent. This factor is significant because the assumption is that prior knowledge of the budget available will influence the amount of proposed costs submitted by the contractor.

Learning factor is the rate at which the unit cost of a product decreases as more units of the product are made. For example, the aerospace industry average cost is reduced by approximately 80 percent as the production quantity doubles [Ref. 28]. This cost reduction is attributed to production efficiency gained in the

learning process. The learning factor is used extensively in government procurement and is known commonly as the learning curve, the experience curve, or the experience factor.

Actual cost (t-1) is the actual cost of production during the previous time period. This factor is made up of two other factors which will be described in the actual cost relationship (4).

The last factor to be described in relationship (2) follows:

Percent change in quantity is the rate of production this year as compared to last year.

$$\% \text{ Change in Quantity} = \frac{\text{quantity (t)}}{\text{quantity (t-1)}} \quad (3)$$

where t = this period (year)  
and t-1 = last period (year)

The next factor to appear in relationship (1) is actual cost, described as follows:

$$\text{Actual cost} = \frac{\text{Total Cost Factor}}{\text{Proposed cost}} \quad (4)$$

Identification of the factors included in the relationship (4) follow:

Total Cost Factor. This factor is input to be able to implement the model in the real world of unknown actual costs by the government. Assuming that the type of contract to be used is known, relative ranges of cost share and profit ratios can be applied by the government to the proposed cost to derive the contractor's estimate of actual cost. The contractor estimates his actual cost and assigns his assumed factors for cost share and profit ratio to derive a proposed cost which he submits to the government in response to the contract solicitation. Since the government does not know the contractor's true actual cost estimate, the total cost of the contract to the government can be derived as a relationship between the known or assumed cost share and profit ratio factors:

$$\begin{aligned} \text{Price Ceiling (or Proposed Cost + Maximum Fee)} = \\ \text{actual cost} + (\text{profit ratio} * \text{proposed cost}) \\ + \text{cost share} * (\text{proposed cost} - \text{actual cost}) \end{aligned} \quad (5)$$

where,

$$\begin{aligned} \text{Profit Ratio} * \text{Proposed Cost} = \\ \underline{\text{contractor's target profit}} \end{aligned} \quad (6)$$

and,

$$\begin{aligned} \text{Cost Share} * (\text{Proposed Cost} - \text{Actual Cost}) = \\ \underline{\text{cost incentive fee}} \quad \underline{\text{for FPIF}} \end{aligned} \quad (7)$$

$$\begin{aligned} \text{Cost Share} * (\text{Actual Cost} - C*t) = \\ \underline{\text{cost incentive fee}} \quad \underline{\text{for CPIF}} \end{aligned}$$

Note that since CPIF target cost is unknown to the government until negotiations are final,  $C*t$  is used as the minimum cost.  $C*t$  (relationship (11) below) represents the government "going in" negotiating cost and is used here to identify the maximum incentive fee liability the government could incur in a CPIF contracting scenario.

Combining the relationships (5, 6 and 7) yields the Total Cost Factor which will be multiplied by contractor's proposed costs to derive a reasonable government estimate of the contractor's actual costs:

$$\begin{aligned} \text{Total Cost Factor} * \text{Proposed Cost} = \\ \text{Actual Cost} + \text{contractor's target profit} \\ + \text{cost incentive fee} \end{aligned} \quad (8)$$

A Price ceiling limits the Actual Costs in a FPIF contract:

$$\text{Price ceiling} = (120 \text{ percent}) * \text{proposed costs} \quad (9)$$

Relationship (9) is commonly set based on the experience of the acquisition manager.

FPI arrangements specify ceiling amounts that are the upper limits to any adjustment in price . . . . The best way to set a ceiling is to look at . . . the maximum amount of dollars of cost you would be willing to pay and the profit you would consider reasonable at that cost level. [Ref. 29]

Considering this guidance, the LCC model depicts a reasonable price ceiling relationship.

CPIF contracts are limited by the amount of total fee to be paid upon settlement of the contract. CPIF actual costs are not limited by an upper bound per se, but are monitored throughout contract execution. Because it is impossible to evaluate a contracting scenario based on an unlimited cost reimbursement, this researcher assumed a limit within which CPIF contract cost plus incentive fee can be modeled and analyzed.

$$\text{Maximum Fee} = (20 \text{ percent}) * \text{Proposed Cost} \quad (10)$$

This assumption is made to be able to apply the LCC model factors to a CPIF contracting scenario and is not supported in contracting regulation or literature as an approved limitation of CPIF contract parameters. The acquisition



manager can only apply the remaining LCC model factors to predict contractor's actual cost by limiting the CPIF contract total price to 120 percent times the proposed cost.

The total price to the government is limited in the LCC model because the amount of funding available for production is limited by the budget available. By knowing the budget ahead of time, the contractor can maximize his profit by assuming that he will get the maximum available price or cost plus fee.

#### C. INCENTIVE CONTRACTING IS CONSIDERED

The LCC model depicts the government's "going in" negotiating cost as  $C^*t$ , the minimum attainable cost level. As used by the government contracting officer:

$C^*t$  is the "going in" negotiating cost; the minimum actual cost the government would expect to pay under the contract.

$$\begin{aligned} C^*t &= \text{learning factor} * \text{actual cost } (t-1) & (11) \\ &* \% \text{ change Quantity} \end{aligned}$$

Relationship (11) is similar to the proposed cost relationship (2) except that it considers the actual costs last year without factoring in the effects of known funding levels (budget factor).

The Total Cost Factor (relationship (8)) is limited in an incentive contracting arrangement by a price ceiling in a FPI contract. For LCC model application purposes, the CPIF total price is limited by an assumed maximum, thus limiting the Total Cost Factor (relationship (8)) for a CPIF contract as well.

The Price ceiling and the maximum CPIF price are further assumed, in the LCC model, to be limited by the funds available in the production program (budget). All of these limitations are summarized and dealt with as the Net Incentive Factor (NIF) relationship:

$$\text{NIF} = \frac{(\text{cost share} + \text{profit ratio}) * \text{budget factor} * \text{learning}}{1 + \text{contractor's discount rate}}$$

$$* \frac{\text{Quantity (t+1)} - \text{cost share}}{\text{Quantity t}} \quad (12)$$

Factors included in relationship (12) which have not yet been described follow:

Contractor's discount rate is the rate at which the contractor values his cost of capital. The contractor's discount rate is usually tied to the contractor's internally required rate of return on capital investments [Ref. 30].

(quantity (t+1)/quantity (t)) represents the percentage of planned change in the production quantity next year. This figure is common knowledge to contractors and is used to develop the proposed cost.

Restating relationship (1), the contractor's expected net return is a function of the cost share, profit ratio, contractor's discount rate, learning factor, budget factor,

and the quantity of production expected for the next year based on this year's production quantity. The NIF demonstrates how combinations of these factors can alter the contractor's cost incurrence incentive.

The basic assumptions of the LCC model support the concept that if the NIF is greater than zero then higher profits will result if the contractor increases his actual costs to equal the budget available by easing control over convenience costs. If the NIF is less than zero, lower profits will result if the contractor increases his actual costs by decreasing control of convenience costs.

The acquisition manager's objective should be to develop a set of contract parameters which result in a positive incentive (negative value of the NIF) to reduce actual costs incurred.

#### D. CONTRACTOR BEHAVIOR IS CONSIDERED

To complete the description of the LCC model factors and their relationships, government acquisition managers' expectations must be taken into account. The government expects to receive a proposed cost which considers the factors in relationship (2). The contracting manager must try to predict, in advance of negotiations and/or award, the amount of costs which will actually be incurred by the contractor. He must estimate actual costs to be able to

establish appropriate incentives and limitations within the bounds of the contracting instrument.

By approximately predicting actual costs, the contracting officer can analyze the degree to which manipulation of the other factors in relationship (2) can cause a negative NIF for the contractor. The purpose of manipulating the factors is to cause the contractor and the government to act in a way which will cause the least possible actual cost to be incurred in the execution of the contract.

#### E. CONTRACT TYPES LIMIT FACTORS

The remaining factors and relationships used in the LCC model are the limitations imposed by the use of different contract types. A FFP contract requires that the price be established in advance. There is no room for manipulating profit except by over or under estimating actual costs incurred in the prior year. Prior year production costs or historical data are often used to predict the actual production costs to be incurred this period. These estimates are then used to establish the contractor's profit on the contract.

In incentive contracting arrangements costs are limited by minimum and/or maximum boundaries. The LCC model depicts the government's "going in" negotiating cost as  $C^*$ ; the cost expected to be paid by the government.

The LCC model factors and their relationships have been provided in detail. A legend of the relationships and their abbreviations is provided as Table 1. The abbreviated titles of the factors and relationships will be used in the next chapter and in the computer application. The next chapter develops the contracting scenarios and documents the decision trade-offs that were made to demonstrate each iteration of the sensitivity analysis.

TABLE 1  
LEGEND OF RELATIONSHIP ABBREVIATIONS

<u>RELATIONSHIP</u>	<u>ABBREVIATIONS</u>
1	Exp. return = cost share * (Cpt-Cat) + (profit% * Cpt)
2	Cpt = budget * learning * (Cat-1) * %changeQt
3	%changeQt = Qt/Qt-1
4	Cat = TCFactor * Cpt But since the government doesn't know the contractor's Cat, relationship 8 is used to derive a <u>Total Cost Factor</u> and approximate Cat.
5	Ceiling or (Cpt+MaxFee) = Cat + (profit% * Cpt) + cost share * (Cpt-Cat) --note--TCFactor*Cpt is limited by price ceiling in FPIF and Cpt + MaxFee in CPIF
6	*Profit = profit% * (Cpt)
7	FPIF INCFEE = cost share * (Cpt-Cat) CPIF INCFEE = cost share * (Cat-C*t)
8	TCFactor * Cpt = Cat + *Profit + INCFEE
9	Ceiling = 120% * Cpt (FPIF assumption)
10	MaxFee = 20% * Cpt (CPIF assumption)
11	C*t = learning * Cat-1 * %changeQt
12	NIF = [((cost share + profit%) * budget * learning) / (1 + discount%)] * [(Qt+1)/Qt] - cost share

#### IV. THE SENSITIVITY ANALYSIS

##### A. TODAY'S ACQUISITION PROCESS

The Assistant Secretary of the Navy Shipbuilding and Logistics (ASN,S+L), Everett Pyatt, summarizes today's acquisition process in a memorandum to the Secretary of the Navy:

. . . The process as I see it today . . . [is] overcontrolled by a complex maze of laws and regulations that apply to contracts large and small. In 1972 the Commission on Government Procurement identified more than 4,000 provisions of federal law related to procurement. These laws and interpretations of both laws and regulations through court cases, board cases, and GAO protest decisions occupy 1,152 linear feet of book shelves in our contract law library. Clearly, nobody understands them all. [Ref. 31]

Secretary Pyatt said of the non-competitive contracting process:

In procurements that are not price competitive, establishing the appropriate cost is the problem. Agreeing on the cost of an item becomes an exercise in auditing, analyzing, and adding up the various elements to project the contract cost. Added to the basic contract cost are profit, cost of money and allowances for general and administrative overhead, which is the current headline issue in contracting. In contracts not awarded on the basis of price competition, the cost must be negotiated, and therein lies a tremendous advantage for the contractor. The contractor knows his cost far better than we ever will, and he knows our budget and the pressures we are under to obligate it. [Ref. 32]

The contractor has an advantage of prior knowledge at the negotiating table. The contracting officer must establish a target cost based on historical cost, vigorous

cost analysis, or estimates of what the contract "should cost" given that the contractor produces efficiently (efficiency is defined by government "should cost" estimates). Difficult and complex cost analyses are required to arrive at an advantageous "going in" cost for the government negotiator.

Unfortunately, these decisions are made in a vacuum of the current contract, or "this year's" contract [Ref. 33]. During the telephone interviews, this researcher found no evidence to indicate that results of negotiations on a current production contract were applied to the acquisition strategy to determine how the contract type, profit ratio, share line, or quantity contracted for current production would affect the total cost to the government in future production periods for that major weapon system.

Interviews with current acquisition and contract managers indicated that long term acquisition strategy trade-off decisions are not made to assess the total effects of each year's production contract parameters. A high rate of turnover of government acquisition managers, coupled with the complexity of regulations that affect trade-off decisions, add to the lack of long term concern for the "total cost to the government".

Acquisition policies are currently in effect which drive the contracting manager to an easier short term



solution to the problem. Mr. Pyatt has stated that only FFP contracts will be made by the Navy unless there is sufficient documented evidence that another type of contract will result in less cost to the government. He has developed a preferential policy of accepting 50 percent cost share ratios for incentive contracts in the cases where an incentive contract is substantiated and approved as the best method for reducing total costs to the government. [Ref. 34]

These types of detailed contracting policies allow the contractor to gain a long term cost advantage. The contractor can predict, with relative certainty, the results of contract negotiations over the long run based on contract type and cost share (if applicable). He already knows the budget available, the planned production scheme, and his estimate of actual costs to produce the product. The contractor's risk is reduced to his economic business considerations. His corporate financial structure, internal rate of return, estimates of future costs based on technological advances, etc., are the considerations which will determine the contractors's long term cost and profit. Mr. Pyatt has effectively made the contractor's job of predicting the future risk and return easier by specifying the contract type and cost share ratios.

## B. THE CONTRACT SCENARIO

The LCC model characteristics and factors are useful for predicting future cost behavior and the long term effects of decision trade-offs because they are general, quantifiable, and easily applied. Contracting managers, however, are faced with a multitude of regulations, policies, court cases, and experience which guide them through the myriad of trade-off decisions necessary to accomplish an effective acquisition strategy. The LCC model can be used by the contract manager to organize the decision trade-offs which must be made and to document the use of other than firm fixed price contracts. The goal should be to execute a long term production acquisition strategy that results in a minimum total cost to the government.

To simulate a contracting scenario, using the total cost factor derived by relationship (8) above, the government acquisition manager can take the estimate of the contractor's proposed cost and apply appropriate estimates of target fee and incentive fee to arrive at an appropriate multiplier of the proposed cost (Total Cost Factor). This multiplier can be used to estimate the contractor's assignment of actual cost to the contract proposal.

Cost estimates are derived based on the type of contract to be written and historical trend data that support factor assumptions. An approximation of the

actual cost (relationship 6) can be developed by the government contract manager which represents a fair assessment of the costs which the contractor may actually incur.

#### C. DEVELOPING A NEGOTIATING POSITION

If the government contract manager is relatively comfortable with the accounting of historical costs, he can achieve a realistic target cost by "going in" to a contract negotiation with C\*t based on last year's actual cost.

The contractor's actual cost figure is derived from assumptions made about the contractor's expectations of cost share, profit, and a detailed knowledge of the business to determine an estimate of the contractor's internal rate of return. The accuracy of the cost estimate is based on the accuracy of the business predictions made and the predictability of the contractor's application of the cost share and profit ratios.

The LCC model carries the results of prior year cost assumptions forward to predict future year cost behavior. It is important to recognize that the LCC model will portray key factors as inaccurate forecasts of future cost behavior if inappropriate estimates are made initially. Cost estimates made this year to contract for the product this year will affect the cost of the contract in future years because historical costs are used to estimate future

period costs. Cost estimates will dramatically affect the total cost to the government over time.

A FPIF contract "going in" cost would be negotiated along with a "going in" profit ( $C*t$  times the profit ratio). The cost incentive fee would be agreed to in the negotiation as the cost share times the difference between proposed cost and actual cost (relationship 7). The result of the negotiation would be a target cost, target fee, and cost incentive relationship that represents the total cost exposure to the government for that contract. [Ref. 35]

In a Cost Plus Incentive Fee (CPIF) arrangement, a target cost and target fee are negotiated. The target fee is bounded by a negotiated maximum and minimum fee. Relationship (10) above describes the maximum fee which is assumed in this application of the LCC model. By using the LCC model as a negotiating tool, the contract manager can derive the CPIF "going in" negotiating cost as  $C*t$  (relationship 11) and add a going in target fee of  $C*t$  times the profit ratio. The profit the government would accept in negotiations would be bounded by the amount derived by multiplying the contractor's proposed cost times the profit ratio (relationship 6).

Contracting procedures state that the cost share should be multiplied by the difference between the actual cost and the target cost. Since the CPIF target cost is unknown to the acquisition manager until after the negotiations are

complete, the C\*t is used in this application of the LCC model to represent the target cost. Because C\*t is the estimated lowest cost that the contractor can incur, C\*t can be used by the acquisition manager to identify the government's maximum expected fee liability in the cost share relationship. The maximum profit and the maximum fee are then added together to get the maximum expected cost incentive fee for a CPIF contract [Ref. 36].

The profit and cost incentive fee would then be added to the proposed cost and limited by 120 percent of the proposed costs (relationship 5).

#### D. LONG TERM ESTIMATES

Variables other than historical cost, cost share, and profit ratio are key to the actual cost versus proposed cost relationship. Factors relating to performance requirements, corporate financial structure, economic considerations, capacity utilization, and production quality must all be considered by the acquisition manager in his acquisition strategy decisions. These factors are not included in the LCC model because it is difficult to generalize and quantify their relationships.

Professors Willis R. Greer and Shu S. Liao found in a study of the effects of competition on the total cost of major weapon systems to the government that:

The profitability of major defense contractors should be examined to decipher its relationship to general business conditions. Given the flexibility contractors have in accumulating costs for a product, it is naive to assume that the price paid by the government is the sum of "true cost" and a predetermined profit. Only by examining the profitability of contractors under different sets of business conditions can one understand their [pricing] strategies. [Ref. 37]

The "other" profitability variables are important to the actual cost versus proposed cost relationship. However, there is no single Navy major weapon system data base which exists to document economic considerations or corporate financial structure data. [Ref. 38]

Through interviews with Navy contract managers, this researcher discovered that data bases available which describe all of the normal qualitative decision factors for a major weapon system over the acquisition cycle is spread throughout the acquisition structure including the program manager, budget manager, contract manager, and acquisition approval authority. No one person or office currently has the responsibility for reviewing all of the decision factors necessary to make decision trade-offs in a long term acquisition strategy.

Even though not all of the decision variables are quantifiable or included in the LCC model, by reviewing the quantitative variables that are included in the LCC model, the contracting officer will be better prepared to document the least cost trade-off alternatives in a long term acquisition strategy.

## E. SUPPORT FOR THE LCC MODEL ASSUMPTIONS

The Defense Financial and Investment Review (DFAIR) was chartered to study contract pricing, financing, and profit (markup) policies to determine if they are resulting in effective and efficient spending of public funds and maintaining the viability of the defense industrial base . . . . [Ref. 39]

Since the DFAIR study is very recent, some of the findings of the study are included here to support LCC model assumptions.

The LCC model assumes that there is little or no competition for production contracts and that the production contract relationship exists for several years. Exhibit I of the DFAIR study provided data to support these assumptions.

According to the DFAIR report, a major weapon system acquisition production process usually involves writing an FPIF/FFP contract. The contract relationship was reported to last an average of between three and fifteen years. The relative cost of major weapon system production contracts is reported to be large, and the technical and cost uncertainty associated with production contracts is relatively small. The average number of producers for a weapon system product is one, but competition is sometimes obtained for major weapon system production contracts. [Ref. 40]

Another assumption made in the LCC model analysis is that the contractor's internal rate of return is twenty percent. The DFAIR study found that the primary goal for most companies is to achieve a stable and adequate return on equity. Most of the corporations indicated that an acceptable rate of return was between fifteen and twenty percent after taxes [Ref. 41].

To use the LCC model one can input cost predictions based on government estimates of actual costs based on the proposed cost, historical costs actually incurred, or on detailed cost estimates which are based on extensive cost analysis. The DFAIR study reports that cost estimators project past experience into the future to develop cost estimates and expected profits [Ref. 42].

The LCC model includes a budget factor to consider the effects of budget changes on the actual costs and proposed costs submitted by the contractor. The DFAIR report points out that contractors have, and use, the knowledge that their projects are expected to continue in the Five Year Defense Plan (Budget Planning Document) to be able to better project expected returns on equity in the long run [Ref. 43].

The LCC model assumes that there is a relationship between the actual and proposed cost, and that the cost actually incurred on any production contract does not equal



the cost proposed by the contractor. The DFAIR report supports this assumption.

Once a program is approved and the competition is over, the best way to improve the returns [for a contractor] is to become somewhat pessimistic on the projected costs during contract negotiations and then, once the contract is negotiated, perform better than those pessimistic projections. [Ref. 44]

#### F. THE "REAL WORLD" CONTRACTING SCENARIOS

Appendix A documents the results of numerous telephone interviews. Realistic contract parameters and assumptions were solicited from Procuring Contracting Officers, Business Financial Managers, and other acquisition professionals. Based on the factors and assumptions provided in Appendix A and the characteristics and relationships of the LCC model described above in Chapter III, factor assignments were made in the LCC model to develop a data base for an acquisition strategy sensitivity analysis (Appendix B).

The sensitivity analysis was designed, first, to portray a "real world" contracting scenario and, second, to identify the effect of contract strategy changes on the Net Incentive Factor (NIF) described in Chapter III. Table 2 shows the real world production contract scenarios which were used in the sensitivity analysis. Three production quantity schemes were developed as appropriate for use in the analysis based on their common use and differing effects on total cost to the government.

TABLE 2  
"REAL WORLD" CONTRACTING SCENARIOS

<u>Production Schemes</u>	<u>K types</u>	<u>Cost Shares</u>	<u>Profit Ratios</u>
Low Rate Initial Production 5,5,10,20,30,30,25	FFP	100%	10%-15%
Normal Production 10,15,20,30,25,15,10	FPIF	50%,35%,20%	9%-15%
Ramp Up Production 5,10,25,25,25,25,10	CPIF	50%,35%,20%	6%-9%

Price Ceiling - 120% to 150% of target cost.

Low Rate Initial Production (LRIP) is commonly used to encourage stability in the production phase by identifying the production problems early and adjusting production methodology before large quantities are produced. The normal production scheme takes the shape of a bell shaped or "normal" curve and is described as a "humped" production schedule in the LCC model description [Ref. 45]. The "ramp up" production scheme is a suggested alternative because it starts with a low production quantity and raises to a level that might be considered as the economic production level for the contractor. Information provided by the ramp up production scheme can be useful to a contract manager who is trying to employ efficient capacity utilization in his long term acquisition strategy.

The budget factor is difficult to predict or change, but is significant to the estimate of proposed costs. NAVAIR has experienced a budget factor of 90 percent to 97 percent from 1983 to 1985 (assume here 95 percent) [Ref. 46]. The learning factor for the aerospace industry is determined to be 80 percent as documented in current literature. Factors which may cause variation are maturity of the system and complexity of the technology. The learning parameter could vary for an individual contractor and should be analyzed (for these purposes assume 80 percent).

The remainder of Table 2 documents the input parameters of profit ratio, cost share, price ceiling, and maximum fee which were provided by the responses of the telephone interviews. Based on these input parameters, the LCC model shows the effects of short term factor changes on the Net Incentive Factor and the long term total estimated cost to the government.

To help explain the use of Table 2, assume that an FFP contract will be analyzed under a LRIP production schedule. Quantities to be contracted for over years (t) 1 through 7 are 5, 5, 10, 20, 30, 30, 25. The profit ratio ranges from 10 percent to 15 percent according to interviews with contracting officers in the field. "What if" the contractor is given 10 percent profit to complete this LRIP/follow-on production successfully within the contracted cost parameters? The contractor's cost share for a FFP contract is defined to be 100 percent, the learning factor is assumed to be 80 percent, and the budget factor for this scenario is assumed to be 95 percent.

Table 3 documents the data results of this scenario as it is presented in Appendix B. Recall that the Appendix B factors and relationships are described in Table 1 (located in Chapter III).

Note that the NIF column in Table 3 is affected by the relationships between the percentage change in quantity, cost share, profit percent, learning and budget factors.

TABLE 3

FFP LOW RATE INITIAL PRODUCTION -- 10% PROFIT

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>learning</u>	<u>budget</u>
1	5	ERR	100.00%	10.00%	80.00%	95.00%
2	5	100.00%	100.00%	10.00%	80.00%	95.00%
3	10	200.00%	100.00%	10.00%	80.00%	95.00%
4	20	200.00%	100.00%	10.00%	80.00%	95.00%
5	30	150.00%	100.00%	10.00%	80.00%	95.00%
6	30	100.00%	100.00%	10.00%	80.00%	95.00%
7	25	83.30%	100.00%	10.00%	80.00%	95.00%

<u>Year</u>	<u>NIF</u>	<u>C*t</u>	<u>Cat</u>	<u>Cpt</u>	<u>ICfactor</u>
1	-30.33%	\$50.00	\$55.00	\$55.00	100.00%
2	39.33%	\$44.00	\$41.80	\$41.80	100.00%
3	39.33%	\$66.88	\$63.54	\$63.54	100.00%
4	4.50%	\$101.66	\$96.57	\$96.57	100.00%
5	-30.33%	\$115.89	\$110.10	\$110.10	100.00%
6	-41.94%	\$88.08	\$83.67	\$83.67	100.00%
7	-100.00%	\$55.78	\$52.99	\$52.99	100.00%

Results of these changing relationships also affect the TCfactor, and accordingly, the relative amounts of proposed cost ( $C_{pt}$ ), actual cost ( $C_{at}$ ), and the government's minimum going in cost ( $C^*t$ ). In this scenario proposed cost equals actual cost because of this fact: if a FFP contract requires the contractor to accept 100 percent of the risk of actual costs incurred over the proposed costs, the contractor is motivated to keep actual cost levels equal to or below proposed costs.

The data in Appendix B document the scenarios and provide figures representing the resultant incentive for cost incurrence (NIF data entry) for each contract scenario. The total estimated cost to the government for each "what if" contract scenario is derived and compared to price ceilings and cost plus maximum fee to ensure price realism.

#### G. COMPETITIVE PRODUCTION STRATEGY

To pursue a competitive production strategy over the long run, an acquisition manager must split the award of a production contract into at least two parts depending on the number of producers available, and the percent of business which will be given to each contractor. Assuming that there are only two producers, that the contracts awarded will be FFP contracts, and that the contractor who "wins" the competition will get at least a majority of the

business, an acquisition manager can modify the LCC model to analyze the cost minimizing incentives of a competitive procurement contract strategy. By multiplying the quantity each year by the percent of the production quantity each contractor expects to win in the award, the NIF for each contractor can be analyzed. Table 4 presents the hypothesized modification of data for a dual source competitive procurement.

Notice that the only difference between the "winner takes all", and the "winner takes 60 percent production", is the change in production quantity. This type of dual source incentive contracting does nothing to change the NIF. The production schedule must still be altered to change the NIF.

Effective use of the results of this competitive procurement modification to the LCC model might provide acquisition managers with some insight into the ways the production scheme may be manipulated to arrive at a least cost incentive for dual source producers.

The next chapter provides an analysis of the sensitivity results contained in Appendix B. Suggestions are made on how to use this data in contract strategy decision making.

TABLE 4  
MODIFICATION FOR DUAL SOURCE

FFP Normal Production: Winner takes all

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>NIF</u>
1	10	ERR	100.00%	10.00%	4.50%
2	15	150.00%	100.00%	10.00%	-7.11%
3	20	133.33%	100.00%	10.00%	4.50%
4	30	150.00%	100.00%	10.00%	-41.94%
5	25	83.33%	100.00%	10.00%	-58.20%
6	15	60.00%	100.00%	10.00%	-53.56%
7	10	66.70%	100.00%	10.00%	-100.0%

FFP Normal Production: Winner takes 60% Production

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>NIF</u>
1	6	ERR	100.00%	10.00%	4.50%
2	9	150.00%	100.00%	10.00%	-7.11%
3	12	133.33%	100.00%	10.00%	4.50%
4	18	150.00%	100.00%	10.00%	-41.94%
5	15	83.33%	100.00%	10.00%	-58.20%
6	9	60.00%	100.00%	10.00%	-53.56%
7	6	66.70%	100.00%	10.00%	-100.0%



## V. ANALYSIS OF THE RESULTS

To investigate the utilization of the LCC model, various scenarios were developed to represent a set of contract situations that realistically depict a major weapon system production contracting scenario.

### A. THE TRADE-OFFS

Appendix B data were generated by first presenting the LCC model factors in a spreadsheet format. Values for LCC model factors were changed within the parameters of Table 2. Results were analyzed for sensitivity to change, result of the change on the NIF, and resultant change in the total cost to the government. By testing the sensitivity to change of the model parameters, insight is gained into the ways a contracting officer can change the key variables of a contracting strategy decision to effect a more advantageous government contracting strategy and negotiating position.

### B. FACTORS MOST SENSITIVE TO CHANGE

As the LCC model factors were changed to depict the Table 2 contract scenarios, the factors representing the greatest sensitivity to change were identified to be the contract type and the quantities produced in the production

scheme. These two factors, in combination, determined whether a negative NIF could be obtained and to what degree profit ratios and/or cost shares could be changed to create a negative NIF.

### C. FINDINGS OF THE ANALYSIS

The sequence of FFP contracts ranged from a LRIP, 10 percent profit ratio (FFPL10), to a ramp up production scheme offering a 15 percent profit (FFPR15). See Appendix B for scenario data. These FFP contracting scenarios were studied first since they are publicized to be the most effective "cost minimizing" contract types.

Of these FFP contracting scenarios, only the ramp up production scheme created a NIF that might be considered sufficient long run incentive for the contractor to reduce cost to a minimum level. Table 5 shows that, considering the NIF in the second and subsequent years of the FFP ramp up production scenario, zero or negative NIF's were generated in the years three through seven. The high positive NIF generated in the second year of the ramp up production scheme would be overcome by follow-on contracts. It would appear that use of this production scheme and contract type would create a strong incentive for the contractor to keep costs to a minimum in the third through seventh years.

TABLE 5  
LONG RUN INCENTIVE TEST

FFPR10

<u>Year</u>	<u>Qt</u>	<u>profit%</u>	<u>NIF</u>
1	5	10.00%	39.33%
2	10	10.00%	74.17%
3	25	10.00%	-30.33%
4	25	10.00%	-30.33%
5	25	10.00%	-30.33%
6	25	10.00%	-72.13%
7	10	10.00%	-100.0%

FFPR14

<u>Year</u>	<u>Qt</u>	<u>profit%</u>	<u>NIF</u>
1	5	14.00%	44.40%
2	10	14.00%	80.50%
3	25	14.00%	-27.80%
4	25	14.00%	-27.80%
5	25	14.00%	-27.80%
6	25	14.00%	-71.12%
7	10	14.00%	-100.0%

FFPR15

<u>Year</u>	<u>Qt</u>	<u>profit%</u>	<u>NIF</u>
1	5	15.00%	45.67%
2	10	15.00%	82.08%
3	25	15.00%	-27.17%
4	25	15.00%	-27.17%
5	25	15.00%	-27.17%
6	25	15.00%	-70.87%
7	10	15.00%	-100.0%

This result also supports the conclusion that a profit maximizing contractor would be willing to bid for this production contract in the first or second year because the cost incentive strongly favors maximum actual cost incurrence in those years. The contractor can tolerate extensive cost growth in the first and second years.

The first year actual costs overstate the cost levels at which the contractor could have produced the product. These inflated actual costs become the historical costs which will be applied by the contracting officer to estimate the following year's actual costs. The second year actual costs will be even higher given the considerable lack of incentive to control them. Thus, even though the scenario creates a cost minimizing incentive for the contractor in years three through seven, the actual costs incurred in years one and two will have already inflated the historical actual cost figures used to estimate the total costs for years three through seven.

From this analysis one can deduce that the goal of the contract manager must be to create a contracting scenario by manipulating the contract type and production scheme to provide a zero or negative NIF for the early years of the production cycle. Thus, the long term results of a cost minimizing NIF will be the lowest possible costs filtering through the follow-on production contracts. Minimum historical cost data will be used to estimate future period

actual costs. The end result will be a lower total cost to the government for the entire production cycle.

This researcher found that the FFP ramp up production scheme could not be altered within the Table 2 parameters to produce a negative NIF in the second year of the production cycle. It was also found that no combination of profit ratio, learning factor, or budget factor results in a negative NIF in the first two years of this contract scenario. The contract incentive allows the contractor to charge the maximum proposed cost in the first and second years. There is no incentive for the contractor to control convenience cost incurrence until the third and subsequent years.

None of the other iterations of the FFP contract type resulted in a negative NIF over the long term production contract cycle. This result demonstrates that the blind use of FFP contracts can lead to unnecessary convenience cost incurrence and higher total production costs to the government in the long run. The contract manager must consider the implied cost incentives of long run contract strategy decisions. He must attempt to reduce the incentives to incur convenience costs on government contracts and so reduce the total government cost of acquiring major weapon systems.

The production schemes were manipulated within the FFP and FPIF contract types to produce a negative or zero NIF in the first two years. Table 6 shows the results of "what if" production scheme trade-offs.

As shown in Table 6, a FFP contract must be produced in similar quantities each year to be able to produce a cost minimizing incentive for the contractor. This finding supports the hypothesis that maintaining production quantity stability will minimize the incentive for convenience cost incurrence.

Further support for a stable production scheme is shown in Table 6. Use of the LCC model shows that, in an incentive type of contracting scenario, acquisition strategists and managers can vary the cost and profit factors. Immediate feedback is obtained about what kinds of changes result in a negative NIF. The quantity in each of the years can be manipulated to produce the total production quantities in the appropriate combination of quantities per year over the length of the production cycle. Table 6 shows the results of changing cost share and quantity changes. Only the smallest percent of change in the production quantities results in negative NIF for cost sharing incentive contracts, thus, further supporting the need for stability in the production quantity schemes to minimize total cost to the government.

TABLE 6  
PRODUCTION SCHEME TRADE-OFF

FFP Minimum cost incentive production scheme

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>NIF</u>
1	18	ERR	100.00%	14.00%	0.00%
2	18	100.00%	100.00%	14.00%	0.00%
3	18	100.00%	100.00%	14.00%	0.00%
4	18	100.00%	100.00%	14.00%	0.00%
5	18	100.00%	100.00%	14.00%	0.00%
6	18	100.00%	100.00%	14.00%	-4.01%
7	17	94.40%	100.00%	14.00%	-72.20%

50% Cost share: Minimum cost incentive production scheme

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>NIF</u>
1	10	ERR	50.00%	14.00%	-1.36%
2	12	120.00%	50.00%	14.00%	-2.71%
3	14	116.70%	50.00%	14.00%	-0.78%
4	17	121.40%	50.00%	14.00%	-2.31%
5	20	117.60%	50.00%	14.00%	-1.36%
6	24	120.00%	50.00%	14.00%	-2.71%
7	28	116.70%	50.00%	14.00%	-50.00%

30% Cost share: Minimum cost incentive production scheme

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>NIF</u>
1	15	ERR	30.00%	14.00%	-0.28%
2	16	106.70%	30.00%	14.00%	-0.39%
3	17	106.30%	30.00%	14.00%	-0.49%
4	18	105.90%	30.00%	14.00%	-0.59%
5	19	105.60%	30.00%	14.00%	-0.67%
6	20	105.30%	30.00%	14.00%	-2.13%
7	20	100.00%	30.00%	14.00%	-30.00%

TABLE 6 (Cont.)

## PRODUCTION SCHEME TRADE-OFF

20% Cost share: Minimum cost incentive production scheme

<u>Year</u>	<u>Qt</u>	<u>%changeQt</u>	<u>cost share</u>	<u>profit%</u>	<u>NIF</u>
1	21	ERR	20.00%	14.00%	0.51%
2	20	95.20%	20.00%	14.00%	0.46%
3	19	95.00%	20.00%	14.00%	0.40%
4	18	94.70%	20.00%	14.00%	0.34%
5	17	94.40%	20.00%	14.00%	0.27%
6	16	94.10%	20.00%	14.00%	-1.16%
7	14	87.50%	20.00%	14.00%	-20.00%



Manipulation of cost shares and profit ratios, individually or simultaneously, will provide more information to the acquisition manager about the trade-off decisions that must be made.

If the production scheme has been developed to produce a cost minimizing NIF in the first two years, by the end of the second year of the production cycle, historical costs are established which represent actual cost incurrence at a cost minimizing level. These historical costs can then be applied to follow-on contract cost estimates. The cost estimates will result in a minimum total cost to the government.

Even if the third year NIF is extremely high, the presumption here is that acceptable cost proposals will reflect the prior two year's historical cost data and the total price paid on the contract will not include payment for unnecessarily incurred convenience costs from the first two years.

#### D. SCENARIOS WHICH REDUCE LONG RUN COST

Appendix B data were reviewed for possible combinations of contract type, production scheme, profit ratio, and cost share that would provide negative NIFs for cost incurrence for the first and second years of the production cycle. Effective use of these contracting scenarios would reduce the actual cost incurrence to acceptable minimum levels

early in the production cycle, and thereby reduce the historically based cost estimates for follow on production contracts. None of the Table 2 contract parameter combinations resulted in a negative or zero NIF in the first two years. However, Table 7 shows that by reducing the profit ratio to one percent, the CPIF normal production scheme scenario resulted in seven years of negative NIF's for a cost share between 35 percent and 50 percent (CN13,CN15).

The results of this analysis demonstrates the effects of writing one contract at a time, without considering the effects of the incentives on the long run total cost to the government. The assumption made in major weapon systems acquisition today is that if the contract type is firm fixed price, or the cost share incentive arrangement is 50 percent, then an incentive exists for the contractor to incur minimum cost on the contract. This assumption does not appear to be supported by this research.

This researcher assumed that Table 2 accurately portrays the most commonly used contracts written today. After analyzing the "what if" contracting scenarios, one can deduce that there is no combination of contract type or production schemes commonly in use today that provides a cost minimizing incentive to the contractor. If the assumed production quantity schemes do not change, the only contract scenario analyzed which represented a long run

TABLE 7  
NEGATIVE NET INCENTIVE FACTORS

CN13

<u>Year</u>	<u>Qt</u>	<u>costshare</u>	<u>profit%</u>	<u>NIF</u>
1	10	35.00%	1.50%	-0.32%
2	15	35.00%	1.50%	-4.18%
3	20	35.00%	1.50%	-0.32%
4	30	35.00%	1.50%	-15.74%
5	25	35.00%	1.50%	-21.13%
6	15	35.00%	1.50%	-19.59%
7	10	35.00%	1.50%	-35.00%

CN15

<u>Year</u>	<u>Qt</u>	<u>costshare</u>	<u>profit%</u>	<u>NIF</u>
1	10	50.00%	1.50%	-1.07%
2	15	50.00%	1.50%	-6.51%
3	20	50.00%	1.50%	-1.07%
4	30	50.00%	1.50%	-22.82%
5	25	50.00%	1.50%	-30.43%
6	15	50.00%	1.50%	-28.26%
7	10	50.00%	1.50%	-50.00%

incentive to control costs provided for a one and one-half percent profit ratio (Table 7).

. . . if the buyer (government) wants to assure the continued existence of several producers for the sake of future competition, the buyer must behave in a manner which will provide adequate returns to the producers. [Ref. 47]

Few contractors will deal with the government for a one percent profit ratio. Commercial contracting provides much more attractive returns for much less risk than a one and one half percent cost type contract affords. The result of this type of contract strategy decision would be to reduce the number of producers, thus negating any savings attributable to the negative net incentive factors.

The assumption that incentives are being imposed to minimize costs is not supported by the results projected using the LCC model. To the contrary, the analysis, using the LCC model, to foresee the effects of acquisition strategy decisions, supports the conclusion that production cycle strategies commonly in use today do not provide incentives to reduce costs to a minimum level over the long term production cycle.

In today's regulated, structured, and controlled acquisition environment contract managers do not have the flexibility to consider the effects of the execution of each year's production contract on the assumptions which are used to build the follow-on contract parameters.

The following chapter will summarize the results of the contracting scenario analysis and draw some conclusions as to how the acquisition managers might use the LCC model to reduce the total cost of government major weapon systems production contracting.

## VI. CONCLUSIONS AND RECOMMENDATIONS

### A. PRINCIPLE CONCLUSIONS

The objective of this study was to analyze the Life Cycle Contracting (LCC) model developed by Dan C. Boger, Carl R. Jones, and Kevin C. Sontheimer to assess the utility of the model in major weapon systems acquisitions. The principle conclusions were derived based on the results of the sensitivity analysis and from the responses provided during telephone interviews.

1. The LCC model parameters and relationships are supportable, given the current literature available in major weapon system acquisition. It is well understood by industry and the government that the price paid for a contract is not necessarily what the contract could have cost if there was full and open competition, effective convenience cost control programs, and/or no prior knowledge of expected funding levels for major weapon system programs.
2. Current regulations, laws, and acquisition policy limit the parameters within which acquisition strategy can be formulated. Most of the current major weapon system contracting is being accomplished with Firm Fixed Price Contracts whenever possible. If an incentive contract must be used, current policy favors fifty/fifty cost shares on incentive arrangements. By specifying contract type and cost share ratios, acquisition policy makers have made it easier for contractors to predict what levels of convenience costs will be accepted before the cost integrity of the contract is jeopardized.
3. The LCC model does not develop a specific "going in" negotiating target cost or target profit. The LCC model can be used to interpret results of trade-off decisions and assist the contract manager in developing sound negotiating strategy alternatives. Total cost to the government can not be specifically

predicted with this model especially in the negotiated CPIF contracting scenario. Because of the simplicity of the model factors and relationships, the magnitude of a total cost changes can only be inferred by interpreting the effects of the changed NIF on the total cost.

4. The acquisition strategy decision for the production of a major weapon system must include an in-depth evaluation of performance requirements, corporate financial structure, the current and future economy, capacity utilization, the industrial base, and production quality. None of these considerations are dealt with explicitly in the LCC model. It would be difficult to modify this "easy to use" model to include more specific quantified parameters. Inclusion of more parameters would not necessarily provide better information for the acquisition manager to build negotiating and strategic contract plans.
5. The LCC model can be used to simulate "real world" contracting scenarios and review "what if" changes to those contracting scenarios. The LCC model can be useful to a contract manager who is trying to employ efficient capacity utilization in his long term acquisition strategy. The LCC model can also be used to determine what effect competitive second sourcing will have on the long term total cost to the government.
6. The two factors determined to be most sensitive to change in the LCC model were the contract type and the quantities produced in the production scheme. These two factors in combination determined whether a negative NIF could be attained (a positive incentive was created to control convenience cost incurrence).
7. A profit maximizing firm would be willing to bid on the first two years of a production FFP contract with a ramped up production scheme. The cost incentive in this case strongly favors convenience cost incurrence in the first two years of an expected seven year production run.
8. To minimize total cost to the government, the acquisition strategist must attempt to develop a production scheme and contract type combination that reduces the incentive to incur convenience costs in the first two years of the production cycle to minimize total cost to the government. Historical costs are used to estimate acceptable follow on

contract proposals. If incentives are built to encourage convenience cost incurrence in the early years of a production cycle, these high costs will get carried forward as future period basic cost estimates. The cost will be inflated by convenience costs before inflation is even considered.

9. None of the FFP contracting scenarios analyzed resulted in negative NIF's for the long term production cycle. An FFP contract is not necessarily the proper contract to use to insure lowest total cost contracts for the government.
10. Production quantity stability was the only realistic contracting technique found to provide a negative NIF in the long run production contracting scenarios. Only the smallest possible percentage of change in production quantities between years resulted in negative NIF's for the long run production cycle.
11. There is no combination of contract type or production scheme commonly in use today that provides cost minimizing incentives to the long run production contractor.

#### B. RECOMMENDATIONS

The LCC model should be used by acquisition strategy decision makers in the early stages of major weapon system program development. Early interest in the effects of production quantity schemes and contract types will determine whether the program can be produced at least total cost to the government over the long run production cycle.

The LCC model should be used by acquisition managers who must justify a deviation from full and open competition in compliance with CICA. Use of the LCC model will allow the acquisition manager to demonstrate the results of the viable, lower cost alternatives to a FFP contract.



Documentation of the alternative contracting scenarios is easily presented and understood using LCC model formulated graphs and tables.

The LCC model should be used to support stabilized production quantity proposals, and could be effectively used to support expected production cost savings in Multiyear procurement proposals.

The LCC model proves to be a very useful decision making tool for the acquisition manager. LCC model factors can be manipulated to create many combinations of contracting strategy trade-off scenarios. Effects on the total cost to the government are easily monitored through the net incentive factor (NIF). The NIF indicates the level of incentive present in the contracting scenario to incur convenience costs; those costs incurred over and above the lowest possible total cost to the government.

The model can easily be modified to focus on the effects of dual source follow-on production contracts and is, therefore, useful in today's major weapon system production world of "less than full and open competition".

#### C. RECOMMENDATIONS FOR FURTHER RESEARCH

Further research should be conducted to answer the following questions:

1. Can other factors affecting contractor "profitability" be described and measured by the government? If so, how can they be included as factors in the LCC model?

2. Can a data base be developed or accumulated that includes all of the data required to test the LCC model with actual major weapon system production contract data?
3. Can the results of the LCC model analysis be used to successfully convince Congress to stabilize production quantities in long run production scenarios?
4. Does acquisition for major weapon systems in the shipbuilding industry fit the LCC model characteristics, relationships, and assumptions?
5. What is the relationship between the award fee (in a CPAF contract) and other LCC model cost factors? Can the award fee be sufficiently defined and predicted to be able to use the LCC model to analyze its effects on strategic contracting decisions?

## APPENDIX A

### TELEPHONE INTERVIEW AND RESPONSES

#### Questions:

1. What types of production contracts do you write, or have you written in the recent past?
2. What profit ratios are normally assigned to each type of contract you write?
3. What cost share is normally assigned to each of the types of incentive contracts you write?
4. Would you use a cost model to develop contract strategy decisions, especially in the area of follow-on production competition? Comments?

**Responses:** Responses were solicited from U. S. Navy Contracting Officers, Business Financial Managers, and other contracting professionals currently working on aerospace weapon system procurement programs. The responses are synopsized here to preserve the anonymity of the respondents.

1. Types of contracts used recently ranged from Firm Fixed Price to Cost plus Award Fee; with all but one saying that only Fixed Price contracts were being awarded for follow-on production programs.
2. The profit ratios ranged from five to nine and a half percent for a cost type contract, to twelve to fifteen percent for a fixed price contract. The most often used profit percent was fourteen to fifteen percent for a fixed price contract.
3. If an incentive arrangement is used, the cost shares used were 80/20, 70/30, 65/35, and 50/50 for a fixed price contract and 65/35, 50/50 for a cost type contract. The majority who hesitated to use an incentive type of contract, in lieu of a firm fixed price, said that they would use a 50/50 share line if they wrote an incentive contract.

4. Would a cost model be used? Comments?

-No.

-Depending of the type of contract and the pressures from above to write the contract in a specific way, I might be able to use a model to justify using other than a firm fixed price contract.

-A cost model couldn't hurt. Right now I don't have many options though. The quantities are already set, all I have to do is fill in the amount of money available.

-A cost model would not be useful. We are being required to second source our production contracts now. We are also being required to write fixed price contracts. We have no say in the production quantities.

-A cost model might be a useful tool if it considered competition. Right now we are going out with Technical Data Packages and soliciting competition for production. There are sources available who want the work. I could use a model that would help me decide how to best contract for that production work in a competitive multi-source arena.

-A model wouldn't be useful to me since my contract decisions are mandated by the Secretary of the Navy. I must use firm fixed price contracts whenever possible. The exception turns into a fixed price incentive arrangement, if you can get it approved. I don't have much room for choice. Normally they hand me the budget and say, "here's the money, now how much can you get for it?". Tailoring the requirements and specifications takes up most of my time. It is currently referred to as a "lust control" program, where we scrub the specifications of all bells and whistles.

## APPENDIX B

### LEGEND OF SPREADSHEET FORMULAS

Qt	Production Quantity this period(t)
%changeQt	Qt (this period)/Qt-1 (last period)
costshare	% of over/under target cost the contractor is responsible for
profit%	% of profit assigned to the contract
learning	% learning (experience factor, learning curve) applied to the contract
budget	% of program budget normally funded by congress
NIF	$\frac{(((\text{cost share} + \text{profit}\%) * \text{budget} * \text{learning}) / (1 + \text{discount rate of } 20\%)) * [Qt+1)/Qt] - \text{cost share}}$
C*t	First year = \$10 * Qt; second and subsequent years = learning * Cat-1 * %changeQt
Cat	TCFactor * Cpt
Cpt	First year assumed to be 1.1 * C*t Second and subsequent years = budget * learning * (Cat-1) * %changeQt
TCFactor	Assuming Price Ceiling and Max Cost are 120% * Cpt; $\text{TCFactor} = [(1.2 - \text{\%profit} - \text{costshare}) * \text{Cpt}] / (1 - \text{costshare})$
*Profit	profit% * Cpt
INCFEE	FPIF = costshare * (Cpt-Cat) CPIF = costshare * (Cat-C*t)
MaxFee	CPIF 20% * Cpt

Total Cost FFP = Cpt + \*profit  
 FPIF = (Cpt + \*profit + INCFEE) limited by Ceiling of  
 120% \* Cpt  
 CPIF unknown until results of negotiations are known

## APPENDIX B

### LEGEND OF SCENARIO ABBREVIATIONS

<u>CONTRACT TYPE</u>	<u>PRODUCTION SCHEME</u>	<u>PROFIT %</u>	<u>COST SHARE</u>
<u>FFP</u>	<u>Low Rate Initial</u> <u>Production</u>	<u>6%</u> <u>9%</u> <u>10%</u>	<u>20%</u>
<u>FPIF</u>	<u>Normal Production</u>	<u>12%</u> <u>14%</u> <u>15%</u>	<u>35%</u>
<u>CPIF</u>	<u>Ramp Up Production</u>		<u>50%</u>

# FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

## FFPL10

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	100.00%	10.00%	80.00%	95.00%
2	5	100.0%	100.00%	10.00%	80.00%	95.00%
3	10	200.0%	100.00%	10.00%	80.00%	95.00%
4	20	200.0%	100.00%	10.00%	80.00%	95.00%
5	30	150.0%	100.00%	10.00%	80.00%	95.00%
6	30	100.0%	100.00%	10.00%	80.00%	95.00%
7	25	83.3%	100.00%	10.00%	80.00%	95.00%

## FFPL14

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	100.00%	14.00%	80.00%	95.00%
2	5	100.0%	100.00%	14.00%	80.00%	95.00%
3	10	200.0%	100.00%	14.00%	80.00%	95.00%
4	20	200.0%	100.00%	14.00%	80.00%	95.00%
5	30	150.0%	100.00%	14.00%	80.00%	95.00%
6	30	100.0%	100.00%	14.00%	80.00%	95.00%
7	25	83.3%	100.00%	14.00%	80.00%	95.00%

## FFPL15

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	100.00%	15.00%	80.00%	95.00%
2	5	100.0%	100.00%	15.00%	80.00%	95.00%
3	10	200.0%	100.00%	15.00%	80.00%	95.00%
4	20	200.0%	100.00%	15.00%	80.00%	95.00%
5	30	150.0%	100.00%	15.00%	80.00%	95.00%
6	30	100.0%	100.00%	15.00%	80.00%	95.00%
7	25	83.3%	100.00%	15.00%	80.00%	95.00%

## FFPM10

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	100.00%	10.00%	80.00%	95.00%
2	15	150.0%	100.00%	10.00%	80.00%	95.00%
3	20	133.3%	100.00%	10.00%	80.00%	95.00%
4	30	150.0%	100.00%	10.00%	80.00%	95.00%
5	25	83.3%	100.00%	10.00%	80.00%	95.00%
6	15	60.0%	100.00%	10.00%	80.00%	95.00%
7	10	66.7%	100.00%	10.00%	80.00%	95.00%

# FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

## FFPL10

Year	NIF	C*t	Cat	Cpt	TCfactor	*profit
1	-30.33%	\$50.00	\$55.00	\$55.00	100.00%	\$5.50
2	39.33%	\$44.00	\$41.80	\$41.80	100.00%	\$4.18
3	39.33%	\$66.88	\$63.54	\$63.54	100.00%	\$6.35
4	4.50%	\$101.66	\$96.57	\$96.57	100.00%	\$9.66
5	-30.33%	\$115.89	\$110.10	\$110.10	100.00%	\$11.01
6	-41.94%	\$88.08	\$83.67	\$83.67	100.00%	\$8.37
7	-100.00%	\$55.78	\$52.99	\$52.99	100.00%	\$5.30

## FFPL14

Year	NIF	C*t	Cat	Cpt	TCfactor	*profit
1	-27.80%	\$50.00	\$55.00	\$55.00	100.00%	\$7.70
2	44.40%	\$44.00	\$41.80	\$41.80	100.00%	\$5.85
3	44.40%	\$66.88	\$63.54	\$63.54	100.00%	\$8.90
4	8.30%	\$101.66	\$96.57	\$96.57	100.00%	\$13.52
5	-27.80%	\$115.89	\$110.10	\$110.10	100.00%	\$15.41
6	-39.83%	\$88.08	\$83.67	\$83.67	100.00%	\$11.71
7	-100.00%	\$55.78	\$52.99	\$52.99	100.00%	\$7.42

## FFPL15

Year	NIF	C*t	Cat	Cpt	TCfactor	*profit
1	-27.17%	\$50.00	\$55.00	\$55.00	100.00%	\$8.25
2	45.67%	\$44.00	\$41.80	\$41.80	100.00%	\$6.27
3	45.67%	\$66.88	\$63.54	\$63.54	100.00%	\$9.53
4	9.25%	\$101.66	\$96.57	\$96.57	100.00%	\$14.49
5	-27.17%	\$115.89	\$110.10	\$110.10	100.00%	\$15.51
6	-39.31%	\$88.08	\$83.67	\$83.67	100.00%	\$12.55
7	-100.00%	\$55.78	\$52.99	\$52.99	100.00%	\$7.95

## FFPN10

Year	NIF	C*t	Cat	Cpt	TCfactor	*profit
1	4.50%	\$100.00	\$110.00	\$110.00	100.00%	\$11.00
2	-7.11%	\$132.00	\$125.40	\$125.40	100.00%	\$12.54
3	4.50%	\$133.76	\$127.07	\$127.07	100.00%	\$12.71
4	-41.94%	\$152.49	\$144.86	\$144.86	100.00%	\$14.49
5	-58.20%	\$96.57	\$91.75	\$91.75	100.00%	\$9.17
6	-53.56%	\$44.04	\$41.84	\$41.84	100.00%	\$4.18
7	-100.00%	\$22.31	\$21.20	\$21.20	100.00%	\$2.12



FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

FFPL10

YearTotal Cost

1	\$60.50
2	\$45.98
3	\$69.89
4	\$106.23
5	\$121.10
6	\$92.04
7	\$58.29

FFPL14

YearTotal Cost

1	\$62.70
2	\$47.65
3	\$72.43
4	\$110.10
5	\$125.51
6	\$95.39
7	\$60.41

FFPL15

YearTotal Cost

1	\$63.25
2	\$48.07
3	\$73.07
4	\$111.06
5	\$126.61
6	\$96.22
7	\$60.94

FFPN10

YearTotal Cost

1	\$121.00
2	\$137.94
3	\$139.78
4	\$159.35
5	\$100.92
6	\$46.02
7	\$23.32

# FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

## FFPN14

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	100.00%	14.00%	80.00%	95.00%
2	15	150.0%	100.00%	14.00%	80.00%	95.00%
3	20	133.3%	100.00%	14.00%	80.00%	95.00%
4	30	150.0%	100.00%	14.00%	80.00%	95.00%
5	25	83.3%	100.00%	14.00%	80.00%	95.00%
6	15	60.0%	100.00%	14.00%	80.00%	95.00%
7	10	66.7%	100.00%	14.00%	80.00%	95.00%

## FFPN15

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	100.00%	15.00%	80.00%	95.00%
2	15	150.0%	100.00%	15.00%	80.00%	95.00%
3	20	133.3%	100.00%	15.00%	80.00%	95.00%
4	30	150.0%	100.00%	15.00%	80.00%	95.00%
5	25	83.3%	100.00%	15.00%	80.00%	95.00%
6	15	60.0%	100.00%	15.00%	80.00%	95.00%
7	10	66.7%	100.00%	15.00%	80.00%	95.00%

## FFPR10

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	100.00%	10.00%	80.00%	95.00%
2	10	200.0%	100.00%	10.00%	80.00%	95.00%
3	25	250.0%	100.00%	10.00%	80.00%	95.00%
4	25	100.0%	100.00%	10.00%	80.00%	95.00%
5	25	100.0%	100.00%	10.00%	80.00%	95.00%
6	25	100.0%	100.00%	10.00%	80.00%	95.00%
7	10	40.0%	100.00%	10.00%	80.00%	95.00%

## FFPR14

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	100.00%	14.00%	80.00%	95.00%
2	10	200.0%	100.00%	14.00%	80.00%	95.00%
3	25	250.0%	100.00%	14.00%	80.00%	95.00%
4	25	100.0%	100.00%	14.00%	80.00%	95.00%
5	25	100.0%	100.00%	14.00%	80.00%	95.00%
6	25	100.0%	100.00%	14.00%	80.00%	95.00%
7	10	40.0%	100.00%	14.00%	80.00%	95.00%

# FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

## FFPN14

Year	NIF	C#t	Cat	Cpt	TCfactor	*profit
1	8.30%	\$100.00	\$110.00	\$110.00	100.00%	\$15.40
2	-3.73%	\$132.00	\$125.40	\$125.40	100.00%	\$17.56
3	8.30%	\$133.76	\$127.07	\$127.07	100.00%	\$17.79
4	-39.83%	\$152.49	\$144.86	\$144.86	100.00%	\$20.28
5	-56.68%	\$96.57	\$91.75	\$91.75	100.00%	\$12.84
6	-51.87%	\$44.04	\$41.84	\$41.84	100.00%	\$5.86
7	-100.00%	\$22.31	\$21.20	\$21.20	100.00%	\$2.97

## FFPN15

Year	NIF	C#t	Cat	Cpt	TCfactor	*profit
1	9.25%	\$100.00	\$110.00	\$110.00	100.00%	\$16.50
2	-2.89%	\$132.00	\$125.40	\$125.40	100.00%	\$18.81
3	9.25%	\$133.76	\$127.07	\$127.07	100.00%	\$19.06
4	-39.31%	\$152.49	\$144.86	\$144.86	100.00%	\$21.73
5	-56.30%	\$96.57	\$91.75	\$91.75	100.00%	\$13.76
6	-51.44%	\$44.04	\$41.84	\$41.84	100.00%	\$6.28
7	-100.00%	\$22.31	\$21.20	\$21.20	100.00%	\$3.18

## FFPR10

Year	NIF	C#t	Cat	Cpt	TCfactor	*profit
1	39.33%	\$50.00	\$55.00	\$55.00	100.00%	\$5.50
2	74.17%	\$88.00	\$83.60	\$83.60	100.00%	\$8.36
3	-30.33%	\$167.20	\$158.84	\$158.84	100.00%	\$15.88
4	-30.33%	\$127.07	\$120.72	\$120.72	100.00%	\$12.07
5	-30.33%	\$96.57	\$91.75	\$91.75	100.00%	\$9.17
6	-72.13%	\$73.40	\$69.73	\$69.73	100.00%	\$6.97
7	-100.00%	\$22.31	\$21.20	\$21.20	100.00%	\$2.12

## FFPR14

Year	NIF	C#t	Cat	Cpt	TCfactor	*profit
1	44.40%	\$50.00	\$55.00	\$55.00	100.00%	\$7.70
2	80.50%	\$88.00	\$83.60	\$83.60	100.00%	\$11.70
3	-27.80%	\$167.20	\$158.84	\$158.84	100.00%	\$22.24
4	-27.80%	\$127.07	\$120.72	\$120.72	100.00%	\$16.90
5	-27.80%	\$96.57	\$91.75	\$91.75	100.00%	\$12.84
6	-71.12%	\$73.40	\$69.73	\$69.73	100.00%	\$9.75
7	-100.00%	\$22.31	\$21.20	\$21.20	100.00%	\$2.97

FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

FFPN14

YearTotal Cost

1	\$125.40
2	\$142.96
3	\$144.86
4	\$165.14
5	\$104.59
6	\$47.69
7	\$24.16

FFPN15

YearTotal Cost

1	\$126.50
2	\$144.21
3	\$146.13
4	\$166.59
5	\$105.51
6	\$48.11
7	\$24.38

FFPR10

YearTotal Cost

1	\$60.50
2	\$91.96
3	\$174.72
4	\$132.79
5	\$100.92
6	\$76.70
7	\$23.32

FFPR14

YearTotal Cost

1	\$62.70
2	\$95.30
3	\$181.08
4	\$137.62
5	\$104.59
6	\$79.49
7	\$24.16

FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

FFPR15

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	100.00%	15.00%	80.00%	95.00%
2	10	200.0%	100.00%	15.00%	80.00%	95.00%
3	25	250.0%	100.00%	15.00%	80.00%	95.00%
4	25	100.0%	100.00%	15.00%	80.00%	95.00%
5	25	100.0%	100.00%	15.00%	80.00%	95.00%
6	25	100.0%	100.00%	15.00%	80.00%	95.00%
7	10	40.0%	100.00%	15.00%	80.00%	95.00%

# FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

FFPR15

Year	NIF	C*t	Cat	Cpt	TCfactor	*profit
1	45.67%	\$50.00	\$55.00	\$55.00	100.00%	\$8.25
2	82.08%	\$88.00	\$83.60	\$83.60	100.00%	\$12.54
3	-27.17%	\$167.20	\$158.84	\$158.84	100.00%	\$23.83
4	-27.17%	\$127.07	\$120.72	\$120.72	100.00%	\$18.11
5	-27.17%	\$96.57	\$91.75	\$91.75	100.00%	\$13.76
6	-70.87%	\$73.40	\$69.73	\$69.73	100.00%	\$10.46
7	-100.00%	\$22.31	\$21.20	\$21.20	100.00%	\$3.18

FFP CONTRACTS: LRIP, NORMAL, AND RAMP UP PRODUCTION

FFPR15

YearTotal Cost

1	\$63.25
2	\$96.14
3	\$182.67
4	\$138.83
5	\$105.51
6	\$80.19
7	\$24.38

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

FL92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	9.00%	80.00%	95.00%
2	5	100.0%	20.00%	9.00%	80.00%	95.00%
3	10	200.0%	20.00%	9.00%	80.00%	95.00%
4	20	200.0%	20.00%	9.00%	80.00%	95.00%
5	30	150.0%	20.00%	9.00%	80.00%	95.00%
6	30	100.0%	20.00%	9.00%	80.00%	95.00%
7	25	83.3%	20.00%	9.00%	80.00%	95.00%

FL122

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	12.00%	80.00%	95.00%
2	5	100.0%	20.00%	12.00%	80.00%	95.00%
3	10	200.0%	20.00%	12.00%	80.00%	95.00%
4	20	200.0%	20.00%	12.00%	80.00%	95.00%
5	30	150.0%	20.00%	12.00%	80.00%	95.00%
6	30	100.0%	20.00%	12.00%	80.00%	95.00%
7	25	83.3%	20.00%	12.00%	80.00%	95.00%

FL152

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	15.00%	80.00%	95.00%
2	5	100.0%	20.00%	15.00%	80.00%	95.00%
3	10	200.0%	20.00%	15.00%	80.00%	95.00%
4	20	200.0%	20.00%	15.00%	80.00%	95.00%
5	30	150.0%	20.00%	15.00%	80.00%	95.00%
6	30	100.0%	20.00%	15.00%	80.00%	95.00%
7	25	83.3%	20.00%	15.00%	80.00%	95.00%

FL92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	9.00%	80.00%	95.00%
2	5	100.0%	35.00%	9.00%	80.00%	95.00%
3	10	200.0%	35.00%	9.00%	80.00%	95.00%
4	20	200.0%	35.00%	9.00%	80.00%	95.00%
5	30	150.0%	35.00%	9.00%	80.00%	95.00%
6	30	100.0%	35.00%	9.00%	80.00%	95.00%
7	25	83.3%	35.00%	9.00%	80.00%	95.00%



# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

## FL92

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	-1.63%	\$50.00	\$66.00	\$55.00	120.00%	(\$2.20)
2	16.73%	\$52.80	\$60.19	\$50.16	120.00%	(\$2.01)
3	16.73%	\$96.31	\$109.79	\$91.49	120.00%	(\$3.66)
4	7.55%	\$175.66	\$200.26	\$166.88	120.00%	(\$6.68)
5	-1.63%	\$240.31	\$273.95	\$228.29	120.00%	(\$9.13)
6	-4.69%	\$219.16	\$249.84	\$208.20	120.00%	(\$8.33)
7	-20.00%	\$166.56	\$189.88	\$158.23	120.00%	(\$6.33)

## FL122

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	0.27%	\$50.00	\$64.63	\$55.00	117.50%	(\$1.93)
2	20.53%	\$51.70	\$57.71	\$49.12	117.50%	(\$1.72)
3	20.53%	\$92.34	\$103.07	\$87.72	117.50%	(\$3.07)
4	10.40%	\$164.91	\$184.08	\$156.67	117.50%	(\$5.49)
5	0.27%	\$220.90	\$246.58	\$209.86	117.50%	(\$7.34)
6	-3.11%	\$197.26	\$220.20	\$187.40	117.50%	(\$6.56)
7	ERR	\$146.80	\$163.86	\$139.46	117.50%	(\$4.88)

## FL152

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	2.17%	\$50.00	\$63.25	\$55.00	115.00%	(\$1.65)
2	24.33%	\$50.60	\$55.28	\$48.07	115.00%	(\$1.44)
3	24.33%	\$88.45	\$96.63	\$84.03	115.00%	(\$2.52)
4	13.25%	\$154.61	\$163.91	\$146.83	115.00%	(\$4.41)
5	2.17%	\$202.69	\$221.44	\$192.56	115.00%	(\$5.73)
6	-1.53%	\$177.15	\$193.54	\$168.29	115.00%	(\$5.05)
7	-20.00%	\$129.03	\$140.96	\$122.57	115.00%	(\$3.68)

## FL93

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	-7.13%	\$50.00	\$67.57	\$55.00	122.86%	(\$4.40)
2	20.73%	\$54.06	\$63.10	\$51.36	122.86%	(\$4.11)
3	20.73%	\$100.95	\$117.83	\$95.90	122.86%	(\$7.67)
4	6.30%	\$188.53	\$220.04	\$179.10	122.86%	(\$14.33)
5	-7.13%	\$264.05	\$308.19	\$250.85	122.86%	(\$20.07)
6	-11.73%	\$246.55	\$287.77	\$234.23	122.86%	(\$13.74)
7	-35.00%	\$191.85	\$223.92	\$182.25	122.86%	(\$14.58)

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

## FL92

Year \*Profit Total Cos Ceiling

1	\$4.95	\$57.75	\$66.00
2	\$4.75	\$52.91	\$60.19
3	\$8.67	\$96.50	\$109.79
4	\$15.81	\$176.02	\$200.26
5	\$21.63	\$240.79	\$273.95
6	\$19.72	\$219.60	\$249.84
7	\$14.99	\$166.90	\$189.88

## FL122

Year \*Profit Total Cos Ceiling

1	\$6.60	\$59.68	\$66.00
2	\$6.20	\$53.60	\$58.94
3	\$11.08	\$95.73	\$105.26
4	\$19.79	\$170.97	\$188.00
5	\$26.51	\$229.02	\$251.83
6	\$23.67	\$204.51	\$224.88
7	\$17.62	\$152.19	\$167.35

## FL152

Year \*Profit Total Cos Ceiling

1	\$8.25	\$61.60	\$66.00
2	\$7.59	\$54.22	\$57.68
3	\$13.27	\$94.77	\$100.83
4	\$23.19	\$165.66	\$176.25
5	\$30.40	\$217.18	\$231.07
6	\$26.57	\$189.82	\$201.95
7	\$19.35	\$138.25	\$147.09

## FL93

Year \*Profit Total Cos Ceiling

1	\$4.95	\$55.55	\$66.00
2	\$4.87	\$52.11	\$61.63
3	\$9.09	\$97.32	\$115.09
4	\$16.97	\$181.74	\$214.92
5	\$23.76	\$254.54	\$301.02
6	\$22.19	\$237.68	\$281.07
7	\$17.27	\$184.94	\$218.70

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

FL123

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	12.00%	80.00%	95.00%
2	5	100.0%	35.00%	12.00%	80.00%	95.00%
3	10	200.0%	35.00%	12.00%	80.00%	95.00%
4	20	200.0%	35.00%	12.00%	80.00%	95.00%
5	30	150.0%	35.00%	12.00%	80.00%	95.00%
6	30	100.0%	35.00%	12.00%	80.00%	95.00%
7	25	83.3%	35.00%	12.00%	80.00%	95.00%

FL152

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	15.00%	80.00%	95.00%
2	5	100.0%	35.00%	15.00%	80.00%	95.00%
3	10	200.0%	35.00%	15.00%	80.00%	95.00%
4	20	200.0%	35.00%	15.00%	80.00%	95.00%
5	30	150.0%	35.00%	15.00%	80.00%	95.00%
6	30	100.0%	35.00%	15.00%	80.00%	95.00%
7	25	83.3%	35.00%	15.00%	80.00%	95.00%

FL95

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	9.00%	80.00%	95.00%
2	5	100.0%	50.00%	9.00%	80.00%	95.00%
3	10	200.0%	50.00%	9.00%	80.00%	95.00%
4	20	200.0%	50.00%	9.00%	80.00%	95.00%
5	20	150.0%	50.00%	9.00%	80.00%	95.00%
6	30	100.0%	50.00%	9.00%	80.00%	95.00%
7	25	83.3%	50.00%	9.00%	80.00%	95.00%

FL125

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	12.00%	80.00%	95.00%
2	5	100.0%	50.00%	12.00%	80.00%	95.00%
3	10	200.0%	50.00%	12.00%	80.00%	95.00%
4	20	200.0%	50.00%	12.00%	80.00%	95.00%
5	30	150.0%	50.00%	12.00%	80.00%	95.00%
6	30	100.0%	50.00%	12.00%	80.00%	95.00%
7	25	83.3%	50.00%	12.00%	80.00%	95.00%

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

## FL123

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	-5.23%	\$50.00	\$66.00	\$55.00	120.00%	(\$3.85)
2	24.53%	\$52.80	\$60.19	\$50.16	120.00%	(\$3.51)
3	24.53%	\$96.31	\$109.79	\$91.49	120.00%	(\$6.40)
4	9.65%	\$175.66	\$200.26	\$166.88	120.00%	(\$11.68)
5	-5.23%	\$240.31	\$273.95	\$228.29	120.00%	(\$15.98)
6	-10.19%	\$219.16	\$249.84	\$208.20	120.00%	(\$14.57)
7	-35.00%	\$166.56	\$189.88	\$158.23	120.00%	(\$11.08)

## FL153

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	-3.33%	\$50.00	\$64.43	\$55.00	117.14%	(\$3.33)
2	28.33%	\$51.54	\$57.36	\$48.96	117.14%	(\$2.94)
3	28.33%	\$91.77	\$102.13	\$87.18	117.14%	(\$5.23)
4	12.50%	\$163.40	\$181.84	\$155.23	117.14%	(\$9.31)
5	-3.33%	\$218.21	\$242.83	\$207.30	117.14%	(\$12.44)
6	-8.61%	\$194.26	\$216.18	\$184.55	117.14%	(\$11.07)
7	-35.00%	\$144.12	\$160.38	\$136.91	117.14%	(\$8.21)

## FL95

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	-12.63%	\$50.00	\$72.60	\$55.00	132.00%	(\$8.80)
2	24.73%	\$58.08	\$72.83	\$55.18	132.00%	(\$8.83)
3	24.73%	\$116.53	\$146.13	\$110.71	132.00%	(\$17.71)
4	6.05%	\$233.31	\$293.20	\$222.12	132.00%	(\$35.54)
5	-12.63%	\$351.84	\$441.20	\$334.24	132.00%	(\$53.48)
6	-18.86%	\$352.96	\$442.61	\$335.31	132.00%	(\$53.65)
7	-50.00%	\$295.08	\$370.03	\$280.32	132.00%	(\$44.85)

## FL125

Year	NIF	C*t	Cat	Cpt	TCfactor	INCREE
1	-10.73%	\$50.00	\$70.40	\$55.00	128.00%	(\$7.70)
2	28.53%	\$56.32	\$68.49	\$53.50	128.00%	(\$7.49)
3	28.53%	\$109.58	\$133.24	\$104.10	128.00%	(\$14.57)
4	8.90%	\$213.19	\$259.24	\$202.53	128.00%	(\$28.35)
5	-10.73%	\$311.09	\$378.28	\$295.53	128.00%	(\$41.37)
6	-17.28%	\$302.63	\$367.99	\$287.50	128.00%	(\$40.25)
7	-50.00%	\$245.33	\$298.32	\$233.06	128.00%	(\$32.63)

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

FL123

Year	*Profit	Total Cos	Ceiling
1	\$6.60	\$57.75	\$66.00
2	\$6.34	\$52.98	\$60.19
3	\$11.56	\$96.64	\$109.79
4	\$21.08	\$176.28	\$200.26
5	\$28.84	\$241.15	\$273.95
6	\$26.30	\$219.93	\$249.84
7	\$19.99	\$167.15	\$189.88

FL153

Year	*Profit	Total Cos	Ceiling
1	\$8.25	\$59.95	\$66.00
2	\$7.73	\$53.76	\$58.76
3	\$13.77	\$95.72	\$104.62
4	\$24.51	\$170.43	\$186.23
5	\$32.73	\$227.59	\$248.75
6	\$29.14	\$202.62	\$221.46
7	\$21.62	\$150.32	\$164.30

FL95

Year	*Profit	Total Cos	Ceiling
1	\$4.95	\$51.15	\$66.00
2	\$5.23	\$51.58	\$66.21
3	\$10.49	\$103.48	\$132.85
4	\$21.04	\$207.62	\$268.54
5	\$31.57	\$312.43	\$401.09
6	\$31.77	\$313.43	\$402.38
7	\$26.56	\$262.03	\$336.39

FL125

Year	*Profit	Total Cos	Ceiling
1	\$6.60	\$53.90	\$66.00
2	\$6.76	\$52.77	\$64.20
3	\$13.15	\$102.67	\$124.92
4	\$25.58	\$199.76	\$243.04
5	\$37.33	\$291.49	\$354.64
6	\$36.32	\$283.56	\$345.00
7	\$29.44	\$229.87	\$279.68

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

FL155

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	15.00%	80.00%	95.00%
2	5	100.0%	50.00%	15.00%	80.00%	95.00%
3	10	200.0%	50.00%	15.00%	80.00%	95.00%
4	20	200.0%	50.00%	15.00%	80.00%	95.00%
5	30	150.0%	50.00%	15.00%	80.00%	95.00%
6	30	100.0%	50.00%	15.00%	80.00%	95.00%
7	25	83.3%	50.00%	15.00%	80.00%	95.00%

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

FL155

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	-8.83%	\$50.00	\$68.20	\$55.00	124.00%	(\$6.60)
2	32.33%	\$54.56	\$64.27	\$51.83	124.00%	(\$6.22)
3	32.33%	\$102.83	\$121.14	\$97.69	124.00%	(\$11.72)
4	11.75%	\$193.82	\$228.32	\$184.13	124.00%	(\$22.10)
5	-8.83%	\$273.99	\$322.76	\$260.29	124.00%	(\$31.23)
6	-15.69%	\$258.21	\$304.17	\$245.30	124.00%	(\$29.44)
7	-50.00%	\$202.78	\$238.87	\$192.64	124.00%	(\$23.12)

# FPIF CONTRACT LOW RATE INITIAL PRODUCTION SCHEME

FL155

Year \*Profit Total Cos Ceiling

1	\$8.25	\$56.65	\$66.00
2	\$8.18	\$53.80	\$62.20
3	\$15.43	\$101.40	\$117.23
4	\$29.07	\$191.11	\$220.96
5	\$41.10	\$270.15	\$312.35
6	\$38.73	\$254.59	\$294.36
7	\$30.42	\$199.94	\$231.17



# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	20.00%	9.00%	80.00%	95.00%
2	15	150.0%	20.00%	9.00%	80.00%	95.00%
3	20	133.3%	20.00%	9.00%	80.00%	95.00%
4	30	150.0%	20.00%	9.00%	80.00%	95.00%
5	25	83.3%	20.00%	9.00%	80.00%	95.00%
6	15	60.0%	20.00%	9.00%	80.00%	95.00%
7	10	66.7%	20.00%	9.00%	80.00%	95.00%

FN122

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	20.00%	12.00%	80.00%	95.00%
2	15	150.0%	20.00%	12.00%	80.00%	95.00%
3	20	133.3%	20.00%	12.00%	80.00%	95.00%
4	30	150.0%	20.00%	12.00%	80.00%	95.00%
5	25	83.3%	20.00%	12.00%	80.00%	95.00%
6	15	60.0%	20.00%	12.00%	80.00%	95.00%
7	10	66.7%	20.00%	12.00%	80.00%	95.00%

FN152

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	20.00%	15.00%	80.00%	95.00%
2	15	150.0%	20.00%	15.00%	80.00%	95.00%
3	20	133.3%	20.00%	15.00%	80.00%	95.00%
4	30	150.0%	20.00%	15.00%	80.00%	95.00%
5	25	83.3%	20.00%	15.00%	80.00%	95.00%
6	15	60.0%	20.00%	15.00%	80.00%	95.00%
7	10	66.7%	20.00%	15.00%	80.00%	95.00%

FN93

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	35.00%	9.00%	80.00%	95.00%
2	15	150.0%	35.00%	9.00%	80.00%	95.00%
3	20	133.3%	35.00%	9.00%	80.00%	95.00%
4	30	150.0%	35.00%	9.00%	80.00%	95.00%
5	25	83.3%	35.00%	9.00%	80.00%	95.00%
6	15	60.0%	35.00%	9.00%	80.00%	95.00%
7	10	66.7%	35.00%	9.00%	80.00%	95.00%

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN92

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	7.55%	\$100.00	\$132.00	\$110.00	120.00%	(\$4.40)
2	4.49%	\$158.40	\$180.58	\$150.48	120.00%	(\$6.02)
3	7.55%	\$192.61	\$219.58	\$182.98	120.00%	(\$7.32)
4	-4.69%	\$263.50	\$300.39	\$250.32	120.00%	(\$10.01)
5	-8.98%	\$200.26	\$228.29	\$190.24	120.00%	(\$7.51)
6	-7.75%	\$109.58	\$124.92	\$104.10	120.00%	(\$4.15)
7	-20.00%	\$66.63	\$75.95	\$63.29	120.00%	(\$2.53)

FN122

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	10.40%	\$100.00	\$129.25	\$110.00	117.50%	(\$3.85)
2	7.02%	\$155.10	\$173.13	\$147.35	117.50%	(\$5.16)
3	10.40%	\$184.67	\$206.14	\$175.44	117.50%	(\$6.14)
4	-3.11%	\$247.37	\$276.13	\$235.00	117.50%	(\$8.23)
5	-7.84%	\$184.08	\$205.48	\$174.88	117.50%	(\$6.12)
6	-6.49%	\$98.63	\$110.10	\$93.70	117.50%	(\$3.29)
7	-20.00%	\$58.72	\$65.54	\$55.78	117.50%	(\$1.95)

FN152

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	13.25%	\$100.00	\$126.50	\$110.00	115.00%	(\$3.30)
2	9.56%	\$151.80	\$165.84	\$144.21	115.00%	(\$4.33)
3	13.25%	\$176.90	\$193.26	\$168.05	115.00%	(\$5.04)
4	-1.53%	\$231.91	\$253.36	\$220.32	115.00%	(\$6.51)
5	-6.70%	\$168.91	\$184.53	\$160.46	115.00%	(\$4.81)
6	-5.22%	\$88.58	\$96.77	\$84.15	115.00%	(\$2.52)
7	-20.00%	\$51.61	\$56.38	\$49.03	115.00%	(\$1.47)

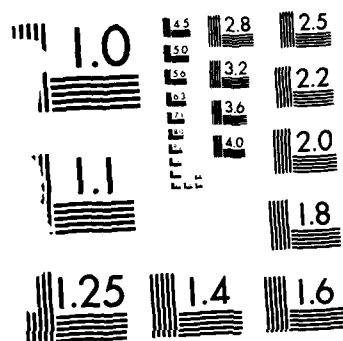
FN93

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	6.80%	\$100.00	\$135.15	\$110.00	122.86%	(\$8.80)
2	2.16%	\$162.18	\$189.29	\$154.07	122.86%	(\$12.33)
3	6.80%	\$201.91	\$235.66	\$191.81	122.86%	(\$15.35)
4	-11.78%	\$282.79	\$330.06	\$268.65	122.86%	(\$21.49)
5	-18.28%	\$220.04	\$256.83	\$209.04	122.86%	(\$16.73)
6	-16.42%	\$123.28	\$143.88	\$117.11	122.86%	(\$9.37)
7	-35.00%	\$76.74	\$89.57	\$72.90	122.86%	(\$5.83)

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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN92

Year	*Profit	Total Cost	Ceiling
1	\$9.90	\$115.50	\$132.00
2	\$13.54	\$158.00	\$180.58
3	\$16.47	\$192.13	\$219.58
4	\$22.53	\$262.84	\$300.39
5	\$17.12	\$199.76	\$228.29
6	\$9.37	\$109.31	\$124.92
7	\$5.70	\$66.46	\$75.95

FN122

Year	*Profit	Total Cost	Ceiling
1	\$13.20	\$119.35	\$132.00
2	\$17.68	\$159.87	\$176.81
3	\$21.05	\$190.35	\$210.53
4	\$28.20	\$254.98	\$282.00
5	\$20.99	\$189.74	\$209.86
6	\$11.24	\$101.66	\$112.44
7	\$6.69	\$60.52	\$66.94

FN152

Year	*Profit	Total Cost	Ceiling
1	\$16.50	\$123.20	\$132.00
2	\$21.63	\$161.52	\$173.05
3	\$25.21	\$188.22	\$201.66
4	\$33.05	\$246.76	\$264.38
5	\$24.07	\$179.72	\$192.56
6	\$12.62	\$94.25	\$100.98
7	\$7.35	\$54.91	\$58.84

FN93

Year	*Profit	Total Cost	Ceiling
1	\$9.90	\$111.10	\$132.00
2	\$13.87	\$155.61	\$184.88
3	\$17.26	\$193.73	\$230.17
4	\$24.18	\$271.33	\$322.38
5	\$18.81	\$211.13	\$250.85
6	\$10.54	\$118.28	\$140.54
7	\$6.56	\$73.63	\$87.48

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

## FN123

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	35.00%	12.00%	80.00%	95.00%
2	15	150.0%	35.00%	12.00%	80.00%	95.00%
3	20	133.3%	35.00%	12.00%	80.00%	95.00%
4	30	150.0%	35.00%	12.00%	80.00%	95.00%
5	25	83.3%	35.00%	12.00%	80.00%	95.00%
6	15	60.0%	35.00%	12.00%	80.00%	95.00%
7	10	66.7%	35.00%	12.00%	80.00%	95.00%

## FN153

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	35.00%	15.00%	80.00%	95.00%
2	15	150.0%	35.00%	15.00%	80.00%	95.00%
3	20	133.3%	35.00%	15.00%	80.00%	95.00%
4	30	150.0%	35.00%	15.00%	80.00%	95.00%
5	25	83.3%	35.00%	15.00%	80.00%	95.00%
6	15	60.0%	35.00%	15.00%	80.00%	95.00%
7	10	66.7%	35.00%	15.00%	80.00%	95.00%

## FN95

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	50.00%	9.00%	80.00%	95.00%
2	15	150.0%	50.00%	9.00%	80.00%	95.00%
3	20	133.3%	50.00%	9.00%	80.00%	95.00%
4	30	150.0%	50.00%	9.00%	80.00%	95.00%
5	25	83.3%	50.00%	9.00%	80.00%	95.00%
6	15	60.0%	50.00%	9.00%	80.00%	95.00%
7	10	66.7%	50.00%	9.00%	80.00%	95.00%

## FN125

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	50.00%	12.00%	80.00%	95.00%
2	15	150.0%	50.00%	12.00%	80.00%	95.00%
3	20	133.3%	50.00%	12.00%	80.00%	95.00%
4	30	150.0%	50.00%	12.00%	80.00%	95.00%
5	25	83.3%	50.00%	12.00%	80.00%	95.00%
6	15	60.0%	50.00%	12.00%	80.00%	95.00%
7	10	66.7%	50.00%	12.00%	80.00%	95.00%

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN123

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	9.65%	\$100.00	\$132.00	\$110.00	120.00%	(\$7.70)
2	4.69%	\$158.40	\$180.58	\$150.48	120.00%	(\$10.53)
3	9.65%	\$192.61	\$219.58	\$182.98	120.00%	(\$12.31)
4	-10.19%	\$263.50	\$300.39	\$250.32	120.00%	(\$17.52)
5	-17.14%	\$200.26	\$228.29	\$190.24	120.00%	(\$10.32)
6	-15.16%	\$109.58	\$124.92	\$104.10	120.00%	(\$7.29)
7	-35.00%	\$66.63	\$75.95	\$63.29	120.00%	(\$4.40)

FN153

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	12.50%	\$100.00	\$128.85	\$110.00	117.14%	(\$5.50)
2	7.22%	\$154.62	\$172.07	\$146.89	117.14%	(\$8.31)
3	12.50%	\$183.54	\$204.25	\$174.37	117.14%	(\$10.46)
4	-8.61%	\$245.10	\$272.76	\$232.85	117.14%	(\$10.97)
5	-16.00%	\$181.84	\$202.35	\$172.75	117.14%	(\$10.26)
6	-13.89%	\$97.13	\$108.09	\$92.27	117.14%	(\$5.54)
7	-35.00%	\$57.65	\$64.15	\$54.77	117.14%	(\$3.29)

FN95

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	6.05%	\$100.00	\$145.20	\$110.00	132.00%	(\$17.80)
2	-0.12%	\$174.24	\$213.50	\$165.53	132.00%	(\$16.48)
3	6.05%	\$233.06	\$292.26	\$221.41	132.00%	(\$35.40)
4	-18.86%	\$350.71	\$439.80	\$333.18	132.00%	(\$52.01)
5	-27.58%	\$293.20	\$367.67	\$278.54	132.00%	(\$44.37)
6	-25.09%	\$176.48	\$221.31	\$167.66	132.00%	(\$26.80)
7	-50.00%	\$118.03	\$148.01	\$112.13	132.00%	(\$17.94)

FN125

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	8.90%	\$100.00	\$140.80	\$110.00	128.00%	(\$15.40)
2	2.36%	\$168.96	\$205.46	\$160.51	128.00%	(\$22.47)
3	8.90%	\$219.15	\$266.49	\$208.19	128.00%	(\$29.15)
4	-17.28%	\$319.79	\$388.86	\$303.80	128.00%	(\$42.52)
5	-26.44%	\$259.24	\$315.24	\$246.28	128.00%	(\$34.48)
6	-23.82%	\$151.31	\$184.00	\$143.75	128.00%	(\$20.12)
7	-50.00%	\$98.13	\$119.33	\$93.23	128.00%	(\$13.05)

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

## FN123

Year	*Profit	Total Cost
1	\$13.20	\$115.50
2	\$18.06	\$158.00
3	\$21.96	\$192.13
4	\$30.04	\$262.84
5	\$22.83	\$199.76
6	\$12.49	\$109.31
7	\$7.60	\$66.46

## FN153

Year	*Profit	Total Cost
1	\$16.50	\$119.90
2	\$22.03	\$160.12
3	\$26.15	\$190.06
4	\$34.93	\$253.81
5	\$25.91	\$188.29
6	\$13.84	\$100.58
7	\$8.21	\$59.69

## FN95

Year	*Profit	Total Cost
1	\$9.90	\$102.30
2	\$14.90	\$153.94
3	\$19.93	\$205.91
4	\$29.99	\$309.86
5	\$25.07	\$259.04
6	\$15.09	\$155.92
7	\$10.09	\$104.28

## FN125

Year	*Profit	Total Cost
1	\$13.20	\$107.80
2	\$19.26	\$157.30
3	\$24.98	\$204.03
4	\$36.46	\$297.72
5	\$29.55	\$241.35
6	\$17.25	\$140.87
7	\$11.19	\$91.36



# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN155

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	50.00%	15.00%	80.00%	95.00%
2	15	150.0%	50.00%	15.00%	80.00%	95.00%
3	20	133.3%	50.00%	15.00%	80.00%	95.00%
4	30	150.0%	50.00%	15.00%	80.00%	95.00%
5	25	83.3%	50.00%	15.00%	80.00%	95.00%
6	15	60.0%	50.00%	15.00%	80.00%	95.00%
7	10	66.7%	50.00%	15.00%	80.00%	95.00%

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN155

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	11.75%	\$100.00	\$136.40	\$110.00	124.00%	(\$13.20)
2	4.89%	\$163.68	\$192.82	\$155.50	124.00%	(\$18.56)
3	11.75%	\$205.67	\$242.28	\$195.39	124.00%	(\$23.45)
4	-15.69%	\$290.73	\$342.48	\$276.20	124.00%	(\$33.14)
5	-25.30%	\$228.32	\$268.96	\$216.91	124.00%	(\$26.03)
6	-22.56%	\$129.10	\$152.08	\$122.65	124.00%	(\$14.72)
7	-50.00%	\$81.11	\$95.55	\$77.06	124.00%	(\$9.25)

# FPIF CONTRACT NORMAL PRODUCTION SCHEME

FN155

Year	*Profit	Total Cost	Ceiling
1	\$16.50	\$113.30	\$132.00
2	\$23.32	\$160.16	\$186.60
3	\$29.31	\$201.25	\$234.46
4	\$41.43	\$284.48	\$331.44
5	\$32.54	\$223.41	\$260.29
6	\$18.40	\$126.33	\$147.18
7	\$11.56	\$79.37	\$92.47

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	9.00%	80.00%	95.00%
2	10	200.0%	20.00%	9.00%	80.00%	95.00%
3	25	250.0%	20.00%	9.00%	80.00%	95.00%
4	25	100.0%	20.00%	9.00%	80.00%	95.00%
5	25	100.0%	20.00%	9.00%	80.00%	95.00%
6	25	100.0%	20.00%	9.00%	80.00%	95.00%
7	10	40.0%	20.00%	9.00%	80.00%	95.00%

FR122

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	12.00%	80.00%	95.00%
2	10	200.0%	20.00%	12.00%	80.00%	95.00%
3	25	250.0%	20.00%	12.00%	80.00%	95.00%
4	25	100.0%	20.00%	12.00%	80.00%	95.00%
5	25	100.0%	20.00%	12.00%	80.00%	95.00%
6	25	100.0%	20.00%	12.00%	80.00%	95.00%
7	10	40.0%	20.00%	12.00%	80.00%	95.00%

FR152

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	15.00%	80.00%	95.00%
2	10	200.0%	20.00%	15.00%	80.00%	95.00%
3	25	250.0%	20.00%	15.00%	80.00%	95.00%
4	25	100.0%	20.00%	15.00%	80.00%	95.00%
5	25	100.0%	20.00%	15.00%	80.00%	95.00%
6	25	100.0%	20.00%	15.00%	80.00%	95.00%
7	10	40.0%	20.00%	15.00%	80.00%	95.00%

FR93

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	9.00%	80.00%	95.00%
2	10	200.0%	35.00%	9.00%	80.00%	95.00%
3	25	250.0%	35.00%	9.00%	80.00%	95.00%
4	25	100.0%	35.00%	9.00%	80.00%	95.00%
5	25	100.0%	35.00%	9.00%	80.00%	95.00%
6	25	100.0%	35.00%	9.00%	80.00%	95.00%
7	10	40.0%	35.00%	9.00%	80.00%	95.00%

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR92

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	16.73%	\$50.00	\$66.00	\$55.00	120.00%	(\$2.20)
2	25.92%	\$105.60	\$120.38	\$100.32	120.00%	(\$4.01)
3	-1.63%	\$240.77	\$274.48	\$228.73	120.00%	(\$9.15)
4	-1.63%	\$219.58	\$250.32	\$208.60	120.00%	(\$8.34)
5	-1.63%	\$200.26	\$228.29	\$190.24	120.00%	(\$7.51)
6	-12.65%	\$182.53	\$208.20	\$173.50	120.00%	(\$6.94)
7	-20.00%	\$66.63	\$75.95	\$63.29	120.00%	(\$2.53)

FR122

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	20.53%	\$50.00	\$64.63	\$55.00	117.50%	(\$1.93)
2	30.67%	\$103.40	\$115.42	\$98.23	117.50%	(\$3.44)
3	0.27%	\$230.84	\$257.68	\$219.30	117.50%	(\$7.68)
4	0.27%	\$206.14	\$230.10	\$195.83	117.50%	(\$6.85)
5	0.27%	\$184.08	\$205.48	\$174.88	117.50%	(\$6.12)
6	-11.89%	\$164.39	\$183.50	\$156.17	117.50%	(\$5.47)
7	-20.00%	\$58.72	\$65.54	\$55.78	117.50%	(\$1.95)

FR152

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	24.33%	\$50.00	\$63.25	\$55.00	115.00%	(\$1.65)
2	35.42%	\$101.20	\$110.56	\$96.14	115.00%	(\$2.38)
3	2.17%	\$221.12	\$241.58	\$210.07	115.00%	(\$6.30)
4	2.17%	\$193.26	\$211.14	\$183.50	115.00%	(\$5.51)
5	2.17%	\$168.91	\$184.53	\$160.46	115.00%	(\$4.81)
6	-11.13%	\$147.53	\$161.28	\$140.25	115.00%	(\$4.21)
7	-20.00%	\$51.61	\$56.38	\$49.03	115.00%	(\$1.47)

FR93

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	20.73%	\$50.00	\$67.57	\$55.00	122.86%	(\$4.40)
2	34.67%	\$108.12	\$126.19	\$102.71	122.86%	(\$8.22)
3	-7.13%	\$252.38	\$294.57	\$239.76	122.86%	(\$19.18)
4	-7.13%	\$235.66	\$275.05	\$223.87	122.86%	(\$17.91)
5	-7.13%	\$220.04	\$256.83	\$209.04	122.86%	(\$16.73)
6	-23.85%	\$205.46	\$239.81	\$195.19	122.86%	(\$15.62)
7	-35.00%	\$76.74	\$89.57	\$72.90	122.86%	(\$5.83)

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

## FR92

Year	*Profit	Total Cost
1	\$4.95	\$57.75
2	\$9.03	\$105.34
3	\$20.59	\$240.17
4	\$18.77	\$219.03
5	\$17.12	\$199.76
6	\$15.62	\$182.18
7	\$5.70	\$66.46

## FR122

Year	*Profit	Total Cost
1	\$6.60	\$59.68
2	\$11.79	\$106.58
3	\$26.32	\$237.94
4	\$23.50	\$212.48
5	\$20.99	\$189.74
6	\$18.74	\$169.44
7	\$6.69	\$60.52

## FR152

Year	*Profit	Total Cost
1	\$8.25	\$61.60
2	\$14.42	\$107.68
3	\$31.51	\$235.27
4	\$27.54	\$205.63
5	\$24.07	\$179.72
6	\$21.04	\$157.08
7	\$7.35	\$54.91

## FR93

Year	*Profit	Total Cost
1	\$4.95	\$55.55
2	\$9.24	\$103.74
3	\$21.58	\$242.16
4	\$20.15	\$226.11
5	\$18.81	\$211.13
6	\$17.57	\$197.14
7	\$6.56	\$73.63

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR123

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	12.00%	80.00%	95.00%
2	10	200.0%	35.00%	12.00%	80.00%	95.00%
3	25	250.0%	35.00%	12.00%	80.00%	95.00%
4	25	100.0%	35.00%	12.00%	80.00%	95.00%
5	25	100.0%	35.00%	12.00%	80.00%	95.00%
6	25	100.0%	35.00%	12.00%	80.00%	95.00%
7	10	40.0%	35.00%	12.00%	80.00%	95.00%

FR153

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	15.00%	80.00%	95.00%
2	10	200.0%	35.00%	15.00%	80.00%	95.00%
3	25	250.0%	35.00%	15.00%	80.00%	95.00%
4	25	100.0%	35.00%	15.00%	80.00%	95.00%
5	25	100.0%	35.00%	15.00%	80.00%	95.00%
6	25	100.0%	35.00%	15.00%	80.00%	95.00%
7	10	40.0%	35.00%	15.00%	80.00%	95.00%

FR95

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	9.00%	80.00%	95.00%
2	10	200.0%	50.00%	9.00%	80.00%	95.00%
3	25	250.0%	50.00%	9.00%	80.00%	95.00%
4	25	100.0%	50.00%	9.00%	80.00%	95.00%
5	25	100.0%	50.00%	9.00%	80.00%	95.00%
6	25	100.0%	50.00%	9.00%	80.00%	95.00%
7	10	40.0%	50.00%	9.00%	80.00%	95.00%

FR125

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	12.00%	80.00%	95.00%
2	10	200.0%	50.00%	12.00%	80.00%	95.00%
3	25	250.0%	50.00%	12.00%	80.00%	95.00%
4	25	100.0%	50.00%	12.00%	80.00%	95.00%
5	25	100.0%	50.00%	12.00%	80.00%	95.00%
6	25	100.0%	50.00%	12.00%	80.00%	95.00%
7	10	40.0%	50.00%	12.00%	80.00%	95.00%

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR123

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	24.53%	\$50.00	\$66.00	\$55.00	120.00%	(\$3.85)
2	39.42%	\$105.60	\$120.38	\$100.32	120.00%	(\$7.02)
3	-5.23%	\$240.77	\$274.48	\$228.73	120.00%	(\$16.01)
4	-5.23%	\$219.58	\$250.32	\$208.60	120.00%	(\$14.50)
5	-5.23%	\$200.26	\$228.29	\$190.24	120.00%	(\$13.32)
6	-23.09%	\$182.63	\$208.20	\$173.50	120.00%	(\$12.15)
7	-35.00%	\$66.63	\$75.95	\$63.29	120.00%	(\$4.42)

FR153

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	28.33%	\$50.00	\$64.43	\$55.00	117.14%	(\$3.30)
2	44.17%	\$103.08	\$114.71	\$97.93	117.14%	(\$5.87)
3	-3.33%	\$229.43	\$255.31	\$217.96	117.14%	(\$13.08)
4	-3.33%	\$204.25	\$227.30	\$194.04	117.14%	(\$11.54)
5	-3.33%	\$181.84	\$202.35	\$172.75	117.14%	(\$10.36)
6	-22.33%	\$161.88	\$180.15	\$153.79	117.14%	(\$9.23)
7	-35.00%	\$57.65	\$64.15	\$54.77	117.14%	(\$3.29)

FR95

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	24.73%	\$50.00	\$72.60	\$55.00	132.00%	(\$3.80)
2	43.42%	\$116.16	\$145.66	\$110.35	132.00%	(\$17.66)
3	-12.63%	\$291.33	\$355.33	\$276.76	132.00%	(\$44.28)
4	-12.63%	\$292.26	\$366.50	\$277.65	132.00%	(\$44.42)
5	-12.63%	\$293.20	\$367.67	\$278.54	132.00%	(\$44.57)
6	-35.05%	\$294.14	\$368.85	\$279.43	132.00%	(\$44.71)
7	-50.00%	\$118.03	\$148.01	\$112.13	132.00%	(\$17.94)

FR125

Year	NIF	C*t	Cat	Cpt	TCfactor	INCFEE
1	28.53%	\$50.00	\$70.40	\$55.00	128.00%	(\$7.20)
2	48.17%	\$112.64	\$136.97	\$107.01	128.00%	(\$14.96)
3	-10.73%	\$273.94	\$333.11	\$260.24	128.00%	(\$36.43)
4	-10.73%	\$266.49	\$324.05	\$253.16	128.00%	(\$35.44)
5	-10.73%	\$259.24	\$315.24	\$246.28	128.00%	(\$34.48)
6	-34.29%	\$252.19	\$306.66	\$239.58	128.00%	(\$33.54)
7	-50.00%	\$98.13	\$119.33	\$93.23	128.00%	(\$13.05)



# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR123

Year	*Profit	Total Cost	Ceiling
1	\$6.60	\$57.75	\$66.00
2	\$12.04	\$105.34	\$120.38
3	\$27.45	\$240.17	\$274.48
4	\$25.03	\$219.03	\$250.32
5	\$22.83	\$199.76	\$228.29
6	\$20.82	\$182.18	\$208.20
7	\$7.60	\$66.46	\$75.95

FR153

Year	*Profit	Total Cost	Ceiling
1	\$8.25	\$59.95	\$66.00
2	\$14.69	\$106.74	\$117.51
3	\$32.69	\$237.58	\$261.55
4	\$29.11	\$211.50	\$232.85
5	\$25.91	\$188.29	\$207.30
6	\$23.07	\$167.63	\$184.55
7	\$8.21	\$59.69	\$65.72

FR95

Year	*Profit	Total Cost	Ceiling
1	\$4.95	\$51.15	\$66.00
2	\$9.93	\$102.63	\$132.42
3	\$24.91	\$257.39	\$332.12
4	\$24.99	\$258.21	\$333.13
5	\$25.07	\$259.04	\$334.24
6	\$25.15	\$259.87	\$335.31
7	\$10.09	\$104.28	\$134.55

FR125

Year	*Profit	Total Cost	Ceiling
1	\$6.60	\$53.90	\$66.00
2	\$12.84	\$104.87	\$128.41
3	\$31.23	\$255.04	\$312.29
4	\$30.38	\$248.10	\$303.80
5	\$29.55	\$241.35	\$295.53
6	\$28.75	\$234.79	\$287.50
7	\$11.19	\$91.36	\$111.87

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR155

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	15.00%	80.00%	95.00%
2	10	200.0%	50.00%	15.00%	80.00%	95.00%
3	25	250.0%	50.00%	15.00%	80.00%	95.00%
4	25	100.0%	50.00%	15.00%	80.00%	95.00%
5	25	100.0%	50.00%	15.00%	80.00%	95.00%
6	25	100.0%	50.00%	15.00%	80.00%	95.00%
7	10	40.0%	50.00%	15.00%	80.00%	95.00%

# FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR155

Year	NIF	C#t	Cat	Cpt	TCfactor	INCFEE
1	32.33%	\$50.00	\$68.20	\$55.00	124.00%	(\$6.60)
2	52.92%	\$109.12	\$128.54	\$103.66	124.00%	(\$12.44)
3	-8.83%	\$257.09	\$302.85	\$244.23	124.00%	(\$29.31)
4	-8.83%	\$242.28	\$285.40	\$230.16	124.00%	(\$27.62)
5	-8.83%	\$228.32	\$268.96	\$216.91	124.00%	(\$26.03)
6	-33.53%	\$215.17	\$253.47	\$204.41	124.00%	(\$24.53)
7	-50.00%	\$81.11	\$95.55	\$77.06	124.00%	(\$9.25)

FPIF CONTRACT RAMP UP PRODUCTION SCHEME

FR155

Year	*Profit	Total Cost
1	\$8.25	\$56.65
2	\$15.55	\$106.77
3	\$36.63	\$251.56
4	\$34.52	\$237.07
5	\$32.54	\$223.41
6	\$30.66	\$210.55
7	\$11.56	\$79.37

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

## CL62

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	6.00%	80.00%	95.00%
2	5	100.0%	20.00%	6.00%	80.00%	95.00%
3	10	200.0%	20.00%	6.00%	80.00%	95.00%
4	20	200.0%	20.00%	6.00%	80.00%	95.00%
5	30	150.0%	20.00%	6.00%	80.00%	95.00%
6	30	100.0%	20.00%	6.00%	80.00%	95.00%
7	25	83.3%	20.00%	6.00%	80.00%	95.00%

## CL72

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	8.00%	80.00%	95.00%
2	5	100.0%	20.00%	8.00%	80.00%	95.00%
3	10	200.0%	20.00%	8.00%	80.00%	95.00%
4	20	200.0%	20.00%	8.00%	80.00%	95.00%
5	30	150.0%	20.00%	8.00%	80.00%	95.00%
6	30	100.0%	20.00%	8.00%	80.00%	95.00%
7	25	83.3%	20.00%	8.00%	80.00%	95.00%

## CL92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	9.00%	80.00%	95.00%
2	5	100.0%	20.00%	9.00%	80.00%	95.00%
3	10	200.0%	20.00%	9.00%	80.00%	95.00%
4	20	200.0%	20.00%	9.00%	80.00%	95.00%
5	30	150.0%	20.00%	9.00%	80.00%	95.00%
6	30	100.0%	20.00%	9.00%	80.00%	95.00%
7	25	83.3%	20.00%	9.00%	80.00%	95.00%

## CL63

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	6.00%	80.00%	95.00%
2	5	100.0%	35.00%	6.00%	80.00%	95.00%
3	10	200.0%	35.00%	6.00%	80.00%	95.00%
4	20	200.0%	35.00%	6.00%	80.00%	95.00%
5	30	150.0%	35.00%	6.00%	80.00%	95.00%
6	30	100.0%	35.00%	6.00%	80.00%	95.00%
7	25	83.3%	35.00%	6.00%	80.00%	95.00%

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

## CL62

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-3.53%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	12.93%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	12.93%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	4.70%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-3.53%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-6.28%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-20.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

## CL72

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-2.27%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	15.47%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	15.47%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	6.60%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-2.27%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-5.22%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-20.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

## CL92

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-1.63%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	16.73%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	16.73%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	7.55%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-1.63%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-4.69%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-20.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

## CL53

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-9.03%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	16.93%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	16.93%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	3.95%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-9.03%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-13.36%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-35.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

## CL62

Year	INCFEE	*Profit
1	\$3.13	\$3.30
2	\$1.41	\$2.99
3	\$2.56	\$5.43
4	\$4.64	\$9.86
5	\$6.31	\$13.42
6	\$5.73	\$12.17
7	\$4.33	\$9.20

## CL72

Year	INCFEE	*Profit
1	\$3.13	\$4.40
2	\$1.41	\$3.99
3	\$2.56	\$7.24
4	\$4.64	\$13.14
5	\$6.31	\$17.89
6	\$5.73	\$16.23
7	\$4.33	\$12.27

## CL92

Year	INCFEE	*Profit
1	\$3.13	\$4.95
2	\$1.41	\$4.49
3	\$2.56	\$8.15
4	\$4.64	\$14.79
5	\$6.31	\$20.13
6	\$5.73	\$18.26
7	\$4.33	\$13.81

## CL53

Year	INCFEE	*Profit
1	\$5.48	\$3.30
2	\$2.47	\$2.99
3	\$4.47	\$5.43
4	\$8.12	\$9.86
5	\$11.05	\$13.42
6	\$10.02	\$12.17
7	\$7.58	\$9.20

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

## CL83

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	8.00%	80.00%	95.00%
2	5	100.0%	35.00%	8.00%	80.00%	95.00%
3	10	200.0%	35.00%	8.00%	80.00%	95.00%
4	20	200.0%	35.00%	8.00%	80.00%	95.00%
5	30	150.0%	35.00%	8.00%	80.00%	95.00%
6	30	100.0%	35.00%	8.00%	80.00%	95.00%
7	25	83.3%	35.00%	8.00%	80.00%	95.00%

## CL93

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	9.00%	80.00%	95.00%
2	5	100.0%	35.00%	9.00%	80.00%	95.00%
3	10	200.0%	35.00%	9.00%	80.00%	95.00%
4	20	200.0%	35.00%	9.00%	80.00%	95.00%
5	30	150.0%	35.00%	9.00%	80.00%	95.00%
6	30	100.0%	35.00%	9.00%	80.00%	95.00%
7	25	83.3%	35.00%	9.00%	80.00%	95.00%

## CL65

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	6.00%	80.00%	95.00%
2	5	100.0%	50.00%	6.00%	80.00%	95.00%
3	10	200.0%	50.00%	6.00%	80.00%	95.00%
4	20	200.0%	50.00%	6.00%	80.00%	95.00%
5	30	150.0%	50.00%	6.00%	80.00%	95.00%
6	30	100.0%	50.00%	6.00%	80.00%	95.00%
7	25	83.3%	50.00%	6.00%	80.00%	95.00%

## CL85

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	8.00%	80.00%	95.00%
2	5	100.0%	50.00%	8.00%	80.00%	95.00%
3	10	200.0%	50.00%	8.00%	80.00%	95.00%
4	20	200.0%	50.00%	8.00%	80.00%	95.00%
5	30	150.0%	50.00%	8.00%	80.00%	95.00%
6	30	100.0%	50.00%	8.00%	80.00%	95.00%
7	25	83.3%	50.00%	8.00%	80.00%	95.00%



# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

## CL83

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-7.77%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	19.47%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	19.47%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	5.85%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-7.77%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-12.31%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-35.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

## CL93

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-7.13%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	20.73%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	20.73%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	6.80%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-7.13%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-11.78%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-35.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

## CL65

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-14.53%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	20.93%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	20.93%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	3.20%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-14.53%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-20.44%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-50.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

## CL85

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-13.27%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	23.47%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	23.47%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	5.10%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-13.27%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-19.39%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-50.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

CL83

Year	INCFEE	*Profit
1	\$5.48	\$4.40
2	\$2.47	\$3.99
3	\$4.47	\$7.24
4	\$8.12	\$13.14
5	\$11.05	\$17.89
6	\$10.02	\$16.23
7	\$7.58	\$12.27

CL93

Year	INCFEE	*Profit
1	\$5.48	\$4.95
2	\$2.47	\$4.49
3	\$4.47	\$8.15
4	\$8.12	\$14.79
5	\$11.05	\$20.13
6	\$10.02	\$18.26
7	\$7.58	\$13.81

CL65

Year	INCFEE	*Profit
1	\$7.83	\$3.30
2	\$3.52	\$2.99
3	\$6.39	\$5.43
4	\$11.60	\$9.86
5	\$15.78	\$13.42
6	\$14.32	\$12.17
7	\$10.83	\$9.20

CL85

Year	INCFEE	*Profit
1	\$7.83	\$4.40
2	\$3.52	\$3.99
3	\$6.39	\$7.24
4	\$11.60	\$13.14
5	\$15.78	\$17.89
6	\$14.32	\$16.23
7	\$10.83	\$12.27

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

CL95

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	9.00%	80.00%	95.00%
2	5	100.0%	50.00%	9.00%	80.00%	95.00%
3	10	200.0%	50.00%	9.00%	80.00%	95.00%
4	20	200.0%	50.00%	9.00%	80.00%	95.00%
5	30	150.0%	50.00%	9.00%	80.00%	95.00%
6	30	100.0%	50.00%	9.00%	80.00%	95.00%
7	25	83.3%	50.00%	9.00%	80.00%	95.00%

# CPIF CONTRACT LOW RATE INITIAL PRODUCTION

CL95

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	-12.63%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	24.73%	\$52.53	\$59.57	\$49.90	119.38%	\$9.98
3	24.73%	\$95.31	\$108.10	\$90.55	119.38%	\$18.11
4	6.05%	\$172.96	\$196.15	\$164.31	119.38%	\$32.86
5	-12.63%	\$235.38	\$266.95	\$223.61	119.38%	\$44.72
6	-18.86%	\$213.56	\$242.20	\$202.88	119.38%	\$40.58
7	-50.00%	\$161.47	\$183.12	\$153.39	119.38%	\$30.68

CPIF CONTRACT LOW RATE INITIAL PRODUCTION

CL95

Year	INCFEE	*Profit
1	\$7.83	\$4.95
2	\$3.52	\$4.49
3	\$6.39	\$8.15
4	\$11.60	\$14.79
5	\$15.78	\$20.13
6	\$14.32	\$18.26
7	\$10.83	\$13.81

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN62

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	20.00%	6.00%	80.00%	95.00%
2	15	150.0%	20.00%	6.00%	80.00%	95.00%
3	20	133.3%	20.00%	6.00%	80.00%	95.00%
4	30	150.0%	20.00%	6.00%	80.00%	95.00%
5	25	83.3%	20.00%	6.00%	80.00%	95.00%
6	15	60.0%	20.00%	6.00%	80.00%	95.00%
7	10	66.7%	20.00%	6.00%	80.00%	95.00%

CN82

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	20.00%	8.00%	80.00%	95.00%
2	15	150.0%	20.00%	8.00%	80.00%	95.00%
3	20	133.3%	20.00%	8.00%	80.00%	95.00%
4	30	150.0%	20.00%	8.00%	80.00%	95.00%
5	25	83.3%	20.00%	8.00%	80.00%	95.00%
6	15	60.0%	20.00%	8.00%	80.00%	95.00%
7	10	66.7%	20.00%	8.00%	80.00%	95.00%

CN92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	20.00%	9.00%	80.00%	95.00%
2	15	150.0%	20.00%	9.00%	80.00%	95.00%
3	20	133.3%	20.00%	9.00%	80.00%	95.00%
4	30	150.0%	20.00%	9.00%	80.00%	95.00%
5	25	83.3%	20.00%	9.00%	80.00%	95.00%
6	15	60.0%	20.00%	9.00%	80.00%	95.00%
7	10	66.7%	20.00%	9.00%	80.00%	95.00%

CN63

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	35.00%	6.00%	80.00%	95.00%
2	15	150.0%	35.00%	6.00%	80.00%	95.00%
3	20	133.3%	35.00%	6.00%	80.00%	95.00%
4	30	150.0%	35.00%	6.00%	80.00%	95.00%
5	25	83.3%	35.00%	6.00%	80.00%	95.00%
6	15	60.0%	35.00%	6.00%	80.00%	95.00%
7	10	66.7%	35.00%	6.00%	80.00%	95.00%

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

## CN62

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	4.70%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	1.96%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	4.70%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-6.28%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-10.12%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-9.02%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-20.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CN82

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	6.60%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	3.64%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	6.60%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-5.22%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-9.36%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-8.18%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-20.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CN92

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	7.55%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	4.49%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	7.55%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-4.69%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-8.98%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-7.76%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-20.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CN63

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	3.95%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	-0.38%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	3.95%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-13.36%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-19.42%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-17.69%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-35.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

## CN62

Year	INCFEE	*Profit
1	\$6.26	\$6.60
2	\$4.23	\$8.98
3	\$5.11	\$10.87
4	\$6.96	\$14.79
5	\$5.26	\$11.18
6	\$2.86	\$6.09
7	\$1.73	\$3.68

## CN82

Year	INCFEE	*Profit
1	\$6.26	\$8.80
2	\$4.23	\$11.98
3	\$5.11	\$14.49
4	\$6.96	\$19.72
5	\$5.26	\$14.91
6	\$2.86	\$8.12
7	\$1.73	\$4.91

## CN92

Year	INCFEE	*Profit
1	\$6.26	\$9.90
2	\$4.23	\$13.47
3	\$5.11	\$16.30
4	\$6.96	\$22.18
5	\$5.26	\$16.77
6	\$2.86	\$9.13
7	\$1.73	\$5.52

## CN63

Year	INCFEE	*Profit
1	\$10.96	\$6.60
2	\$7.40	\$8.98
3	\$8.95	\$10.87
4	\$12.18	\$14.79
5	\$9.21	\$11.18
6	\$5.01	\$6.09
7	\$3.03	\$3.68



# CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN83

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	35.00%	8.00%	80.00%	95.00%
2	15	150.0%	35.00%	8.00%	80.00%	95.00%
3	20	133.3%	35.00%	8.00%	80.00%	95.00%
4	30	150.0%	35.00%	8.00%	80.00%	95.00%
5	25	83.3%	35.00%	8.00%	80.00%	95.00%
6	15	60.0%	35.00%	8.00%	80.00%	95.00%
7	10	66.7%	35.00%	8.00%	80.00%	95.00%

CN93

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	35.00%	9.00%	80.00%	95.00%
2	15	150.0%	35.00%	9.00%	80.00%	95.00%
3	20	133.3%	35.00%	9.00%	80.00%	95.00%
4	30	150.0%	35.00%	9.00%	80.00%	95.00%
5	25	83.3%	35.00%	9.00%	80.00%	95.00%
6	15	60.0%	35.00%	9.00%	80.00%	95.00%
7	10	66.7%	35.00%	9.00%	80.00%	95.00%

CN65

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	50.00%	6.00%	80.00%	95.00%
2	15	150.0%	50.00%	6.00%	80.00%	95.00%
3	20	133.3%	50.00%	6.00%	80.00%	95.00%
4	30	150.0%	50.00%	6.00%	80.00%	95.00%
5	25	83.3%	50.00%	6.00%	80.00%	95.00%
6	15	60.0%	50.00%	6.00%	80.00%	95.00%
7	10	66.7%	50.00%	6.00%	80.00%	95.00%

CN85

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	50.00%	8.00%	80.00%	95.00%
2	15	150.0%	50.00%	8.00%	80.00%	95.00%
3	20	133.3%	50.00%	8.00%	80.00%	95.00%
4	30	150.0%	50.00%	8.00%	80.00%	95.00%
5	25	83.3%	50.00%	8.00%	80.00%	95.00%
6	15	60.0%	50.00%	8.00%	80.00%	95.00%
7	10	66.7%	50.00%	8.00%	80.00%	95.00%

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN83

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	5.85%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	1.31%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	5.85%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-12.31%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-18.66%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-16.84%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-35.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

CN93

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	6.80%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	2.16%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	6.80%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-11.78%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-18.28%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-16.42%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-35.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

CN65

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	3.20%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	-2.71%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	3.20%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-20.44%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-28.72%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-26.36%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-50.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

CN85

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	5.10%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	-1.02%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	5.10%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-19.39%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-27.96%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-25.51%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-50.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN83

Year	INCFEE	*Profit
1	\$10.96	\$8.80
2	\$7.40	\$11.98
3	\$8.95	\$14.49
4	\$12.18	\$19.72
5	\$9.21	\$14.91
6	\$5.01	\$8.12
7	\$3.03	\$4.91

CN93

Year	INCFEE	*Profit
1	\$10.96	\$9.90
2	\$7.40	\$13.47
3	\$8.95	\$16.30
4	\$12.18	\$22.18
5	\$9.21	\$16.77
6	\$5.01	\$9.13
7	\$3.03	\$5.52

CN65

Year	INCFEE	*Profit
1	\$15.66	\$6.60
2	\$10.57	\$8.98
3	\$12.78	\$10.87
4	\$17.40	\$14.79
5	\$13.15	\$11.18
6	\$7.16	\$6.09
7	\$4.33	\$3.68

CN85

Year	INCFEE	*Profit
1	\$15.66	\$8.80
2	\$10.57	\$11.98
3	\$12.78	\$14.49
4	\$17.40	\$19.72
5	\$13.15	\$14.91
6	\$7.16	\$8.12
7	\$4.33	\$4.91

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN95

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	10	ERR	50.00%	9.00%	80.00%	95.00%
2	15	150.0%	50.00%	9.00%	80.00%	95.00%
3	20	133.3%	50.00%	9.00%	80.00%	95.00%
4	30	150.0%	50.00%	9.00%	80.00%	95.00%
5	25	83.3%	50.00%	9.00%	80.00%	95.00%
6	15	60.0%	50.00%	9.00%	80.00%	95.00%
7	10	66.7%	50.00%	9.00%	80.00%	95.00%

# CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN95

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	6.05%	\$100.00	\$131.32	\$110.00	119.38%	\$22.00
2	-0.18%	\$157.58	\$178.71	\$149.70	119.38%	\$29.94
3	6.05%	\$190.63	\$216.19	\$181.10	119.38%	\$36.22
4	-18.86%	\$259.43	\$294.23	\$246.46	119.38%	\$49.29
5	-27.58%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-25.09%	\$106.78	\$121.10	\$101.44	119.38%	\$20.29
7	-50.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

CPIF CONTRACT NORMAL PRODUCTION SCHEME

CN95

Year	INCFEE	*Profit
1	\$15.66	\$9.90
2	\$10.57	\$13.47
3	\$12.78	\$16.30
4	\$17.40	\$22.18
5	\$13.15	\$16.77
6	\$7.16	\$9.13
7	\$4.33	\$5.52

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

CR62

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	6.00%	80.00%	95.00%
2	10	200.0%	20.00%	6.00%	80.00%	95.00%
3	25	250.0%	20.00%	6.00%	80.00%	95.00%
4	25	100.0%	20.00%	6.00%	80.00%	95.00%
5	25	100.0%	20.00%	6.00%	80.00%	95.00%
6	25	100.0%	20.00%	6.00%	80.00%	95.00%
7	10	40.0%	20.00%	6.00%	80.00%	95.00%

CR82

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	8.00%	80.00%	95.00%
2	10	200.0%	20.00%	8.00%	80.00%	95.00%
3	25	250.0%	20.00%	8.00%	80.00%	95.00%
4	25	100.0%	20.00%	8.00%	80.00%	95.00%
5	25	100.0%	20.00%	8.00%	80.00%	95.00%
6	25	100.0%	20.00%	8.00%	80.00%	95.00%
7	10	40.0%	20.00%	8.00%	80.00%	95.00%

CR92

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	20.00%	9.00%	80.00%	95.00%
2	10	200.0%	20.00%	9.00%	80.00%	95.00%
3	25	250.0%	20.00%	9.00%	80.00%	95.00%
4	25	100.0%	20.00%	9.00%	80.00%	95.00%
5	25	100.0%	20.00%	9.00%	80.00%	95.00%
6	25	100.0%	20.00%	9.00%	80.00%	95.00%
7	10	40.0%	20.00%	9.00%	80.00%	95.00%

CR63

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	6.00%	80.00%	95.00%
2	10	200.0%	35.00%	6.00%	80.00%	95.00%
3	25	250.0%	35.00%	6.00%	80.00%	95.00%
4	25	100.0%	35.00%	6.00%	80.00%	95.00%
5	25	100.0%	35.00%	6.00%	80.00%	95.00%
6	25	100.0%	35.00%	6.00%	80.00%	95.00%
7	10	40.0%	35.00%	6.00%	80.00%	95.00%

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

## CR62

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	12.93%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	21.17%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-3.53%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-3.53%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-3.53%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-13.41%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-20.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CR82

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	15.47%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	24.33%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-2.27%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-2.27%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-2.27%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-12.91%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-20.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CR92

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	16.73%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	25.92%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-1.63%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-1.53%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-1.53%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-12.65%	\$177.97	\$201.83	\$169.07	119.38%	\$33.31
7	-20.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CR63

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	16.93%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	29.92%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-9.03%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-9.03%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-9.03%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-24.61%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-35.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27



# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

## CR62

Year	INCFEE	*Profit
1	\$3.13	\$3.30
2	\$2.82	\$5.99
3	\$6.39	\$13.58
4	\$5.80	\$12.32
5	\$5.26	\$11.18
6	\$4.77	\$10.14
7	\$1.73	\$3.68

## CR82

Year	INCFEE	*Profit
1	\$3.13	\$4.40
2	\$2.82	\$7.98
3	\$6.39	\$18.11
4	\$5.80	\$16.43
5	\$5.26	\$14.91
6	\$4.77	\$13.53
7	\$1.73	\$4.91

## CR92

Year	INCFEE	*Profit
1	\$3.13	\$4.95
2	\$2.82	\$8.98
3	\$6.39	\$20.37
4	\$5.80	\$18.48
5	\$5.26	\$16.77
6	\$4.77	\$15.22
7	\$1.73	\$5.52

## CR63

Year	INCFEE	*Profit
1	\$5.48	\$3.30
2	\$4.93	\$5.99
3	\$11.18	\$13.58
4	\$10.15	\$12.32
5	\$9.21	\$11.18
6	\$8.35	\$10.14
7	\$3.03	\$3.68

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

## CR83

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	8.00%	80.00%	95.00%
2	10	200.0%	35.00%	8.00%	80.00%	95.00%
3	25	250.0%	35.00%	8.00%	80.00%	95.00%
4	25	100.0%	35.00%	8.00%	80.00%	95.00%
5	25	100.0%	35.00%	8.00%	80.00%	95.00%
6	25	100.0%	35.00%	8.00%	80.00%	95.00%
7	10	40.0%	35.00%	8.00%	80.00%	95.00%

## CR93

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	35.00%	9.00%	80.00%	95.00%
2	10	200.0%	35.00%	9.00%	80.00%	95.00%
3	25	250.0%	35.00%	9.00%	80.00%	95.00%
4	25	100.0%	35.00%	9.00%	80.00%	95.00%
5	25	100.0%	35.00%	9.00%	80.00%	95.00%
6	25	100.0%	35.00%	9.00%	80.00%	95.00%
7	10	40.0%	35.00%	9.00%	80.00%	95.00%

## CR65

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	6.00%	80.00%	95.00%
2	10	200.0%	50.00%	6.00%	80.00%	95.00%
3	25	250.0%	50.00%	6.00%	80.00%	95.00%
4	25	100.0%	50.00%	6.00%	80.00%	95.00%
5	25	100.0%	50.00%	6.00%	80.00%	95.00%
6	25	100.0%	50.00%	6.00%	80.00%	95.00%
7	10	40.0%	50.00%	6.00%	80.00%	95.00%

## CR85

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	8.00%	80.00%	95.00%
2	10	200.0%	50.00%	8.00%	80.00%	95.00%
3	25	250.0%	50.00%	8.00%	80.00%	95.00%
4	25	100.0%	50.00%	8.00%	80.00%	95.00%
5	25	100.0%	50.00%	8.00%	80.00%	95.00%
6	25	100.0%	50.00%	8.00%	80.00%	95.00%
7	10	40.0%	50.00%	8.00%	80.00%	95.00%

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

## CR83

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	19.47%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	33.08%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-7.77%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-7.77%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-7.77%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-24.11%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-35.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CR93

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	20.73%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	34.67%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-7.13%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-7.13%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-7.13%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-23.85%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-35.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CR65

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	20.93%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	38.67%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-14.53%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-14.53%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-14.53%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-35.81%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-50.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

## CR85

Year	NIF	C#t	Cat	Cpt	TCfactor	MaxFee
1	23.47%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	41.83%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-13.27%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-13.27%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-13.27%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-35.31%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-50.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

CR83

Year	INCFEE	*Profit
1	\$5.48	\$4.40
2	\$4.93	\$7.98
3	\$11.18	\$18.11
4	\$10.15	\$16.43
5	\$9.21	\$14.91
6	\$8.35	\$13.53
7	\$3.03	\$4.91

CR93

Year	INCFEE	*Profit
1	\$5.48	\$4.95
2	\$4.93	\$8.98
3	\$11.18	\$20.37
4	\$10.15	\$18.48
5	\$9.21	\$16.77
6	\$8.35	\$15.22
7	\$3.03	\$5.52

CR65

Year	INCFEE	*Profit
1	\$7.83	\$3.30
2	\$7.04	\$5.99
3	\$15.98	\$13.58
4	\$14.50	\$12.32
5	\$13.15	\$11.18
6	\$11.93	\$10.14
7	\$4.33	\$3.68

CR85

Year	INCFEE	*Profit
1	\$7.83	\$4.40
2	\$7.04	\$7.98
3	\$15.98	\$18.11
4	\$14.50	\$16.43
5	\$13.15	\$14.91
6	\$11.93	\$13.53
7	\$4.33	\$4.91

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

CR95

Year	Qt	%changeQt	costshare	profit%	learning	budget
1	5	ERR	50.00%	9.00%	80.00%	95.00%
2	10	200.0%	50.00%	9.00%	80.00%	95.00%
3	25	250.0%	50.00%	9.00%	80.00%	95.00%
4	25	100.0%	50.00%	9.00%	80.00%	95.00%
5	25	100.0%	50.00%	9.00%	80.00%	95.00%
6	25	100.0%	50.00%	9.00%	80.00%	95.00%
7	10	40.0%	50.00%	9.00%	80.00%	95.00%

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

CR95

Year	NIF	C*t	Cat	Cpt	TCfactor	MaxFee
1	24.73%	\$50.00	\$65.66	\$55.00	119.38%	\$11.00
2	43.42%	\$105.05	\$119.14	\$99.80	119.38%	\$19.96
3	-12.63%	\$238.29	\$270.24	\$226.37	119.38%	\$45.27
4	-12.63%	\$216.19	\$245.19	\$205.38	119.38%	\$41.08
5	-12.63%	\$196.15	\$222.46	\$186.34	119.38%	\$37.27
6	-35.05%	\$177.97	\$201.83	\$169.07	119.38%	\$33.81
7	-50.00%	\$64.59	\$73.25	\$61.36	119.38%	\$12.27

# CPIF CONTRACT RAMP UP PRODUCTION SCHEME

CR95

Year	INCFEE	*Profit
1	\$7.83	\$4.95
2	\$7.04	\$8.98
3	\$15.98	\$20.37
4	\$14.50	\$18.48
5	\$13.15	\$16.77
6	\$11.93	\$15.22
7	\$4.33	\$5.52

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